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MIT Sloan Management Review

NAVIGATING RISK AND DISRUPTION

SKILLS AND TACTICS FOR AN UNCERTAIN FUTURE

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What, Me Worry?

CALL ME SHORTSIGHTED, BUT I am not losing sleep over the prospect of a supercharged AI gaining consciousness and waging war on humans.

What does keep me up at night is that humans are already wielding the power of artificial intelligence to control, exploit, discriminate against, misinform, and manipulate other humans. Tools that can help us solve complex and vexing problems can also be put to work by cybercriminals or give authoritarian governments unprecedented power to spy on and direct the lives of their citizens. We can build models that lead to the development of new, more sustainable materials or important new drugs — and we can build models that embed biased decision-making into systems and processes and then grind individuals up in their gears.

In other words, AI already gives us plenty to worry about. We shouldn't be distracted by dystopian fever dreams that misdirect our attention from present-day risk.

The recent emergence of ChatGPT and similar large language models into broader public awareness has heightened general interest in both the potential benefits and the dangers of AI. A few days before I wrote this, Geoffrey Hinton, a giant of the AI field whose work underlies much of the current technology, resigned from his position at Google, telling *The New York Times* that he wanted to speak freely about the risks of generative AI. "It is hard to see how you can prevent the bad actors from using it for bad things," he told the newspaper.

And there, indeed, is where we should put our attention. Throughout human history, new technologies have been put to work to advance civilization, but they have also been weaponized by bad actors. The difference this time is that not only is the technology extremely complex and difficult for most people to understand — so too are the potential outcomes.

There's a steep learning curve that all of us must be prepared to climb if we want AI to do more good than harm. The excitement about possible uses for these tools must be tempered by good questions about how automated decisions are made, how AI systems are trained, and what assumptions and biases are thus baked in. Business leaders, especially, need to be as aware of reputational and material risks, and the potential for value destruction, as they are of opportunities to leverage AI.

And while AI development is likely to continue to proceed at a breakneck pace that no open letter can arrest, the rest of us ought to proceed deliberately and with caution. In "Don't Get Distracted by the Hype Around Generative AI," Lee Vinsel reminds us that tech bubbles are accompanied by a lot of noise. We need to let go of the fear of missing out (FOMO) and take a measured, rational approach to evaluating emerging technologies.

Here at *MIT Sloan Management Review*, we will continue to support business leaders with the research and intelligence required for clear-headed decision-making and judicious experimentation. Our ongoing focus on responsible AI practices, led by guest editor Elizabeth Renieris of Notre Dame, is a critical part of that commitment.

We're all stakeholders in the AI revolution. Let's embrace that responsibility and strive to ensure that the good actors outweigh the bad.

Elizabeth Heichler // @eheichler
Editorial Director, Magazine
MIT Sloan Management Review

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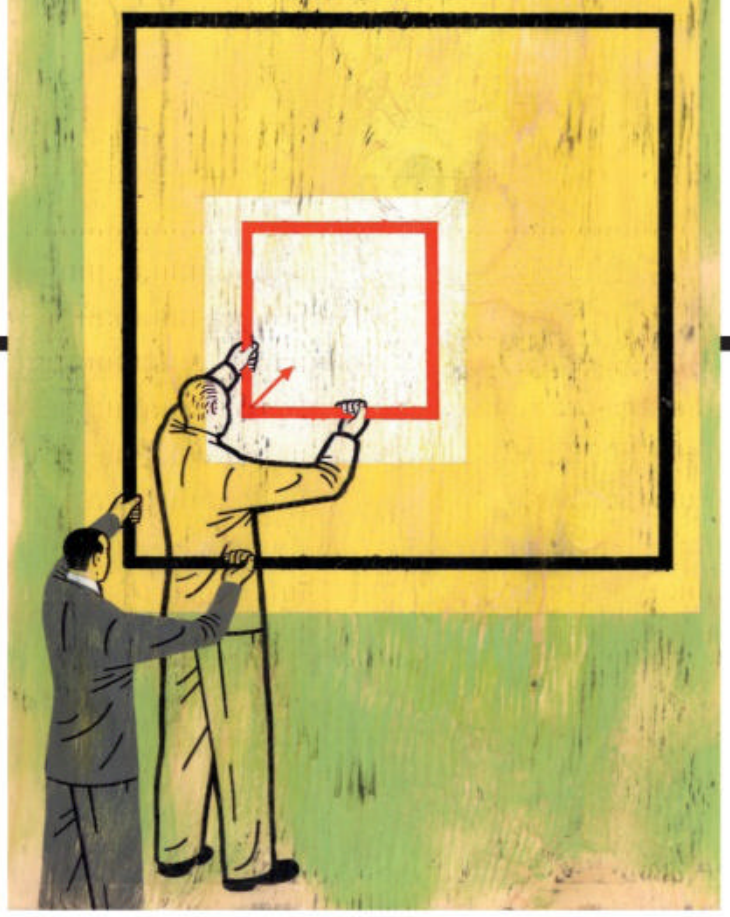

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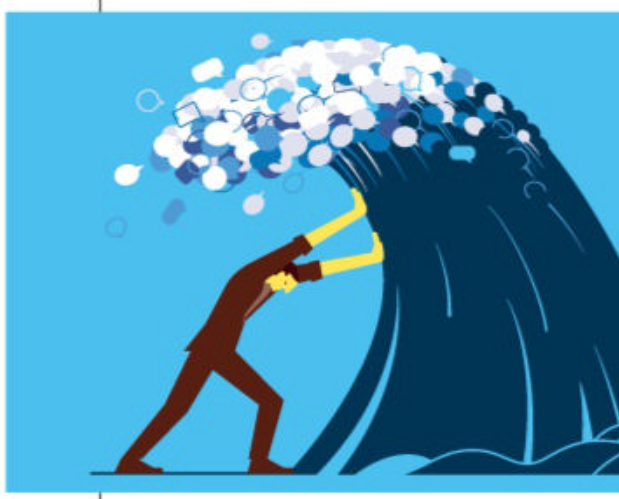

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EDITOR'S NOTE:
Some articles in this issue were originally published online. They have been adapted for print.

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MANAGING TECHNOLOGY

A Better Way to Pilot Emerging Technologies

IKEA didn't give up on drones for inventory management after pilots fizzled — it came up with a better approach for testing new technologies.

By Torbjørn Netland, Omid Maghazei, and Michael Lewis

Michael Morgenstern / theispot.com

Companies that are considering adopting a particular technology typically base the decision on the strength of the business case. Such an assessment is straightforward when the technology will upgrade existing equipment or replace manual processes with automation, or when the technology is already in use at other organizations that have demonstrated its benefits. But it's much harder to quantify the value of emerging technologies that are not yet being widely used.

In fact, budget-centered business case approaches are biased against novel technologies, partly because they don't factor in the value of learning gains and spillover effects. But absent the discipline imposed

by requiring a good business case, organizations that bring in new technologies via isolated pilot projects often find that these experiments go nowhere.

To understand how organizations can successfully assess, pilot, and implement novel technologies, we studied how IKEA introduced drone technology into its warehouse operations. We describe the research in more detail in our 2022 *Journal of Operations Management* article, "Emerging Technologies and the Use Case: A Multi-Year Study of Drone Adoption." The company's experience demonstrates that a use case can be developed into a meaningful business case with a coordinated approach and the right partners.

IKEA may be the world's largest furniture company, but it suffers from the same pain point as every other retailer: inventory accuracy. Knowing what you have in stock when, and where it is located, is critical, but human error still creeps in at a company that moves hundreds of thousands of different items daily. Every time a customer asks for a product that is not in stock, a potential sale is lost — as well as future sales, if the customer is disappointed enough with the company.

Correcting inventory inaccuracies drives up costs as well. One of IKEA's distribution centers in Germany used to have several employees dedicated to fixing such errors through regular manual inventory checks. Using forklifts or ladders to count inventory is tedious, strenuous, and potentially dangerous work that is prone to human error.

One promising technology that IKEA thought might help solve the problem was drones — something it had already experimented with in uncoordinated trials at a few of its warehouses in 2018-2019. In Thailand, a warehouse employee had purchased a consumer drone and flown it in the warehouse to photograph pallets on high racks. In Hungary and Germany, IKEA had tested various startups' products, including professional tethered drones and hobby drones. But they all required too much setup, maintenance, and management while introducing new safety risks — and their performance recording pallets and their content was poor compared with humans'. Nothing stuck.

The Breakthrough

In 2020, employees in the corporate supply chain development function at IKEA realized that the problem wasn't simply with the technology but was also a result of the company's piecemeal, uncoordinated approach to testing drones. IKEA decided to connect, coordinate, and directly manage the drone initiatives as part of its global Development Innovation Network (DIN), which had been established two years earlier as a governance unit for new logistics and fulfillment technologies.

While it is important to develop a business case for cutting-edge technology, first focus on the use case: how the technology can be applied to solve a business problem.

The DIN covers six areas: packaging and identification, automation and robotics, fulfillment of services, handling and storage, transportation, and digital technologies. Each area is run by two leaders who dedicate half their time to this role. In addition, five to 10 subject matter experts support each area as needed. The DIN's leaders and experts are geographically dispersed across IKEA, and each area forms its own network.

The DIN does not directly manage local pilots but allocates resources and builds top-management support. It also collects and shares experiences from successful and failed pilots. The unit's high-level view is critical for matching emerging technologies and the right technology suppliers with the best use case in the appropriate location.

The handling and storage network's leaders decided to systematically test three drone technologies in 2020. One of them was discarded after the initial pilot because it did not appear to reduce labor costs. This left IKEA with a semiautonomous solution from a French warehouse management specialist and an autonomous solution from Swiss drone startup Verity.

IKEA tested both drones in parallel at multiple warehouse locations, following a three-step approach: exploration of solutions, proof-of-concept pilots, and deployment. The DIN was responsible for the first two steps.

The pilot tests gave IKEA the opportunity to identify the benefits and drawbacks of the drones while the vendors iteratively improved the technology to better fit the specific use case. The semiautonomous drones were found to be technologically fit for purpose, but the expense of manual setup and administration mitigated any other cost advantages. After more extensive testing failed to yield a clear business case, the semiautonomous option was discarded.

The early pilots of the autonomous drones were more promising. By June 2020, IKEA's store warehouse in Spreitenbach, Switzerland, had successfully incorporated eight of the drones into its operations. The devices, which required no human intervention, flew at night to check the locations of all pallets that had been moved during the day. On Sundays, the drones flew to all pallet locations, providing up-to-date information about the warehouse's stock status directly into IKEA's warehouse management system. The business case looked great for this high-cost location that had local nighttime work restrictions. But would it work elsewhere, too?

To assess the potential business case for fully autonomous drones at other IKEA locations, the DIN studied what types of

warehouses and locations could have the most to gain from this technology. It then handed over the contacts and guidelines to IKEA's operational divisions. Once the implementation had reached six store warehouses in mid-2022, the DIN reevaluated its business case calculations with observed data — and uncovered a better business case than had been originally anticipated. At the time of this writing, the autonomous drones are flying in 16 of IKEA's store warehouses in seven countries.

While it is ultimately important to develop a business case for investments in cutting-edge technologies, in many cases the best approach is to first focus on the use case: how the technology can be applied to solve a meaningful business problem. Then the potential business case can be iteratively developed as the company gains experience experimenting with the technology in pilot projects. Unfortunately, many companies never get further than the piloting stage and wind up in a cycle of endlessly testing new technology use cases. But IKEA's successful adoption of drone technology shows that companies can avoid this trap.

By starting with the use case — and exploring it systematically and in a coordinated manner — the DIN helped IKEA match the solution to the problem.

Taking a Coordinated Approach to Program Governance

It's not only IKEA that has acquired this hard-earned wisdom. Robert Bosch GmbH — a German engineering and electronics company, and an Industry 4.0 forerunner — had a similar experience. When Bosch kicked off its I4.0@Bosch transformation program in 2014, senior management aimed to gain speed and scale by skipping program governance.

This choice resulted in a lot of experimentation involving technology-driven use cases throughout the Bosch production network — along with a lack of knowledge sharing and disappointing bottom-line results. At that time, a senior manager who attended an internal Bosch conference for sharing best practices lamented to one of us, "At every booth, I saw geographically dispersed units trying to solve the same problem with similar solutions. … It's when we realized that we need a more coordinated approach."

Shortly after this insight emerged, Bosch established the Connected Industry innovation cluster responsible for governance and collaboration related to implementing advanced digital technologies in its production network. It now offers internal and external customers a catalog of more than 100 technology use cases — all piloted and deployed in some of Bosch's 230 factories.

The use case catalog briefly describes how technologies such as additive manufacturing or artificial intelligence solve a problem in a specific process, the approximate implementation costs and time involved, the technological maturity, and estimates of expected performance improvement.

Five Key Lessons

The following steps, based on IKEA's successful adoption of cutting-edge technology, can be employed by other organizations as they work on their own implementations.

1. Create a governance structure for the exploration of emerging technologies. For drone technology, the "let a hundred flowers bloom" approach was unsuccessful at IKEA. It spread resources and know-how too thin, and experiences from failures were kept under close wraps or lost. In providing a governance structure at IKEA, the DIN unit helped support a strategic process for discovering a viable solution to a real problem by allocating funding and personnel without overly interfering in local drone pilots.

2. Start with the use case, but keep a close eye on the business case. Organizations are used to looking aggressively for the business case in technology acquisition projects. You can easily miss an opportunity by asking "What's the return on investment?" too early in the process. It's tough to answer that question before piloting the technology. Instead, consider what the business case could become if the use case is successful.

3. Select partners strategically. Many vendors offer technology that is attractive but won't necessarily address the problem at hand. IKEA's early local trials with different drone vendors were often unsuccessful; selecting a few strategic vendors allowed for closer interaction and, critically, a greater commitment from the vendors, who saw the potential to serve the whole company. Eventually, IKEA actively engaged with one of those vendors to co-mature the technology until it was fit for purpose.

4. Iterate the use case until the business case evolves. Moving from a use case to a business case isn't always a linear process. It requires negotiation and problem-solving between business decision makers and operational and technological change agents. Technological implementation and economic viability may have to be modified across different locations.

5. Take a phased approach to scaling. As soon as a technology is operationally functional and robust and the benefits outweigh the costs, it's time to start scaling. Because disruptive technologies develop so rapidly, a phased rollout that allows for further operational iteration is more advisable than direct corporatewide adoption. IKEA's phased rollout of drones has ensured that they are first deployed in locations where they are expected to be most cost-effective. ■

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Reprint 64412. For ordering information, see page 4.
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GENERATIVE AI

Don't Get Distracted by the Hype Around Generative AI

Tech bubbles are bad information environments.

By Lee Vinsel

Technology bubbles can pose difficult quandaries for business leaders: They may feel pressure to invest early in an emerging technology to gain an advantage over competitors but don't want to fall for empty hype. As we enter a period of greater economic uncertainty and layoffs in multiple industries, executives are grappling with questions about where to cut costs and where to invest more.

The rapidly developing field of artificial intelligence and machine learning poses a particular challenge to business decision makers. Investments in proven predictive models are increasingly seen as sound and are expected to drive an increase in spending on AI from $33 billion in 2021 to $64 billion in 2025. But further out on the cutting edge, generative AI is sparking a huge amount of noise and speculation.

Generative AI refers to machine learning models — such as ChatGPT, Bing AI, DALL-E, and Midjourney — that are trained on vast databases of text and images to generate new text and images in response to a prompt. Headlines like "Ten ChatGPT Hacks You Can't Live Without!" and "You're Using ChatGPT Wrong! Here's How to Be Ahead of 99% of ChatGPT Users" have begun to proliferate. Meanwhile, Axios reported that funding is pouring into generative AI, rising from $613 million in 2022 to $2.3 billion in 2023 — money that will only fuel the hype cycle.

Business leaders who don't want to miss a great opportunity but don't want to waste time and money implementing oversold technologies would do well to keep in mind some fundamental realities about tech bubbles. First, these phenomena rely on narrative — stories that people tell about how the new technology will develop and affect societies and economies, as business school professors Brent Goldfarb and David Kirsch wrote in their 2019 book, *Bubbles and Crashes: The Boom and Bust of Technological Innovation*. Unfortunately, the early narratives that emerge around new technologies are almost always wrong. Indeed, overestimating the promises and potencies of new systems is at the very heart of bubbles.

Business futurists and analysts have terrible track records when it comes to accurately predicting the future of technological development, because no one can foresee the creative ways in which humans will adopt and implement tools over time or the myriad opportunistic ways in which humans will use new tools to exploit or gain power over others. Or, as futurist Roy Amara put it in what became known as Amara's law, "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

The unrealistic narratives that drive technology bubbles are already on display with generative AI. Some enthusiasts claim that ChatGPT is only a few steps away from *artificial general intelligence* — becoming an independent entity capable of cognition equal to or better than that of humans. Sam Altman, who, as CEO of ChatGPT maker OpenAI, has considerable skin in the game, has claimed that AI "will eclipse the agricultural revolution, the Industrial Revolution, the internet revolution all put together." A bleaker view that nonetheless assumes a similar outsized impact for these large language models comes from the Future of Life Institute, which published an open letter calling for a six-month ban on training AI systems more powerful than GPT-4, the large language model underlying ChatGPT Plus, because they threaten humanity.

Although these boosters and critics have wildly divergent perspectives, they are united in promoting feverish visions of the future that are disconnected from the reality of what businesses can reliably accomplish with generative AI tools today. They do little to help leaders understand how these technologies work and what

Aad Goudappel / theispot.com

risks and limitations they have, and to otherwise work through whether the tools will improve a company's routines and contribute to its bottom line.

The news media, itself an industry fueled by FOMO (fear of missing out), further inflates the bubble with breathless coverage that runs ahead of the facts. A recent *Wall Street Journal* article titled "Generative AI Is Already Changing White-Collar Work as We Know It" offers no real evidence of change in white-collar workplaces but rather presents business leaders' speculations on the technology's potential impact. Like other reports portending doom for workers, it points to a summary of a paper by researchers at OpenAI and the University of Pennsylvania that seeks to predict how many jobs will be affected by these new software systems.

In fact, such forecasts have a history of inaccuracy. In a recent essay, economics professor Gary Smith and retired professor and technology consultant Jeffrey Funk pointed out that the OpenAI/Penn study used the same U.S. Department of Labor database as a 2016 Oxford University and Deloitte study that claimed it's highly probable many jobs will be automated into nonexistence by 2030. Both studies attempted to quantify the percentage of jobs based on repetitive tasks and then projected how many of those jobs will be lost to technological change. Given that trends over the past seven years don't seem to be bearing out the predictions made by the 2016 study, there's little reason to believe such predictions will be accurate now.

A Call for Caution

With the poor track record of past predictions, executives must practice prudence, applying sober reasoning when confronted with hype about the future impacts of technologies. Teams will need to practice organized skepticism: not knee-jerk, dismissive doubting but, rather, rigorous and scientific assessment and reasoning. Claims about the efficacy of new technologies need to be scrutinized for empirical strength. Rather than getting caught up in questions that invite speculation, like, "How could this evolve?" or "What are the implications?" it's better to start with questions that establish a factual basis: "What do we know?" and "What is the evidence?" Ask specific questions about how the technology works, how reliable its predictions are, and the quality of other outputs.

Business leaders must be especially mindful to engage in critical thinking when information comes from known vectors of technology hype, including consultancies, vendors, and industry analysts.

While experimenting with publicly available generative AI tools can be cheap and instructive, companies must carefully assess the potential risks of using new technologies. ChatGPT, for example, is known to create falsehoods, including listing references to texts that simply do not exist. Using this technology requires careful oversight, especially where the output from these generative AI systems might go out to customers and open up the company to reputational harm. Companies also run the risk of losing control of intellectual property or sensitive information by using systems without oversight, as Samsung discovered when its employees inadvertently leaked sensitive corporate data by feeding it into ChatGPT, which uses submitted information to further train the system's models. I also know artists, designers, and publishers who refuse to use generative AI in ways that might harm their own or their clients' intellectual property.

Given these potential risks, companies that are going to experiment with generative AI should set ground rules for its use. An obvious first step is to require that any workers using these technologies for their work disclose it. A company's use policies can also set basic requirements, such as insisting that generative AI use must not break existing ethical and legal codes, and organizations should consider limiting what kinds of company data are entered into these systems. The Society for Human Resource Management and other groups have recently published workplace guidelines for the use of generative AI, and business leaders would be wise to follow updates in such thinking.

There are also other risks companies should be mindful of. Technology critics have been arguing that corporations will deploy generative AI in ways that will degrade workers' lives, making them harder and worse. Leaders would do well to ensure that this does not happen and to instead promote uses of these technologies that make workers' lives easier, less stressful, and more humane.

FOMO and competitive pressures can be useful if they keep managers attentive to changes around them, but they should not allow these anxieties to steer them into irrational and imprudent decisions. The excitement around generative AI will very likely follow the course of enthusiasm for other digital technologies outlined in Nicholas Carr's 2004 book, *Does IT Matter?* The adoption of digital technologies often creates short-term advantages within a sector, but these advantages slip away as the technologies become the norm — part of the corporate landscape, like text editors, spreadsheets, and customer relationship management systems.

In other words, there is currently no evidence that your company will fall behind strategically or even be disrupted if you press pause to develop a thoughtful course of action rather than leaping headfirst into generative AI. In this context, leaders would be well advised to focus on the fundamental aims of their business and ask, "Will this system help us achieve our ends?" If someone says it will, ask them to prove it. ■

Lee Vinsel (*@sts_news*) *is an associate professor of science, technology, and society at Virginia Tech; the host of* Peoples & Things*, a podcast about human life with technology; and coauthor of* The Innovation Delusion: How Our Obsession With the New Has Disrupted the Work That Matters Most (*Random House, 2020*).

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REDUCING COMPLEXITY

When Doing Less Adds Up to More

Companies that reduce and simplify workload on the front lines find that they can position employees to deliver a better customer experience.

By Zeynep Ton

Imagine that, as a new executive at a retail company with stagnating sales, you're tasked with finding new ways to grow revenues. After studying the market, you propose a new line of products to be sold in all of your locations. Upon launching the new product line, however, sales aren't as robust as expected, so you introduce price promotions and give the new lineup more prominent store placement. Yet sales still don't budge.

When you visit stores to investigate, you find that some locations haven't rearranged the store layout and others haven't stocked the inventory they received weeks ago. A sales associate at one location is confused about which of your several products are new, while the manager at your most popular location tells you that overall sales have declined since the store was rearranged around the new lineup because regular customers can't find the products they're used to purchasing.

Back at headquarters, you study your company's employee and customer metrics and find a high rate of employee turnover and harsh customer reviews about the level of service they receive, all dating back years. In this environment, what if, before adding new products and promotions, you first considered subtraction?

Although this is a hypothetical example, it's been a surprisingly common state of affairs at several companies my colleagues and I have worked with through the Good Jobs Institute, a nonprofit I cofounded in 2017 to help leaders set their employees up to succeed.

The work that customer-facing employees do is significantly determined by people working in upstream functions such as sales and marketing, IT, logistics, and product design who do not manage that work. Unfortunately, at most companies we've worked with, the people in upstream functions rarely considered the impact their decisions would have on the front line.

Functions working in silos make rational decisions to improve their own metrics but all too often simply build on earlier decisions, without coordination. They initiate new pilots, reports, technologies, performance tools, processes, directives, delivery schedules, and display layouts, not to mention last-minute changes to deliveries, deadlines, meetings, and promotions — all of which require a lot of scrambling at the front lines.

As a result, decisions from upstream functions often reduce value to the customer because they make it difficult for customer-facing employees to provide good service. Productivity is low because of complicated workflows, errors, rework, confused customers who require more attention, and employees bogged down with tedious tasks. Low productivity makes it harder to pay employees more, and low pay drives higher rates of turnover, creating a vicious cycle of high turnover and poor performance. Big swings in workload make it hard to provide stable schedules or operate with full-time employees. When employees are asked to redo something because someone at headquarters changed their mind, or when they fail in front of a customer because of a rule that doesn't make sense, they are demoralized. Understaffing is common because the amount and variability of the workload is often much higher than what upper management assumes and causes burnout, corner-cutting, and poor service. Finally, all of this overload creates anxiety, which takes its own toll.

Research has shown that people systematically overlook making subtractive changes as an option. In our work with companies, we have also seen a tendency to default to addition (of features, products, or promotions) to grow a business but seldom a consideration of subtraction as a

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major change lever. Yes, leaders often take steps such as closing units, selling off divisions, or laying off employees with the aim of streamlining the business, but such steps are blunt instruments aimed at improving the company's immediate financial health, and they tend to detract from employee effectiveness and customer experience.

Subtracting upstream, in contrast, is a more deliberate process that involves coordinating various functions of a business in order to reduce complexity for front-line employees and investing in those employees so they can better serve customers.

How Subtracting Upstream Works in Practice

To start subtracting, upstream functions should spend time on the front lines talking to employees and their managers to identify the most significant factors affecting their workloads. Which of these activities drive value for customers, and which ones are a distraction? The same goes for the product or service offering: What can you take out that will strengthen your value proposition by making it easier for customers to find what they want or ensuring that what they get is what they need? What makes employees' work needlessly tedious, unproductive, and unpredictable? How can you schedule non-customer-facing tasks or influence customer demand to better smooth the workload?

When Mercadona, a Spanish supermarket chain, looked for ways to become more competitive in early 1990s, one of its first moves was to stop offering frequent promotions and stick with consistently low prices. Promotions create peaks and valleys in customer demand, causing extra work for employees and increasing costs throughout the supply chain. Mercadona wanted to win with its customers by offering the best quality-to-price ratio, the best service, and a quick in-and-out experience. Giving up on promotions strengthened that value proposition on all three counts. Mercadona is now Spain's largest supermarket chain.

Similarly, in 2017, Sam's Club began a turnaround to improve its customer experience, which required it to fix employee turnover and position employees to better serve customers. One of the biggest levers was to reduce the number of products and price changes — both of which involved the merchandising function. Sam's had kept adding products over the years, which made it take longer to shelve products and harder to keep all of them in stock.

Store managers were also buried with requests from different functions at the home office. To reduce the number of requests, smooth out their timing, and coordinate them so that they hit during less-busy times of the day or week, Sam's Club created a gatekeeper (which it called ATC, for air traffic control). If HR, logistics, or merchandising wanted to initiate a pilot or a new tool, the department had to discuss it and get permission during a Monday all-department meeting. This freed up time that store managers had been wasting dealing with confusing, often mixed messages from corporate and helped them level out the front-line workload.

All of this subtraction — and more — improved employees' ability to provide good service and Sam's Club's ability to lower prices. John Furner, the former CEO, told my students that the company started getting letters from customers thanking it for hiring additional associates, even when it hadn't done so, because associates were more available to help them. Clubs that reduced product variety began receiving higher customer ratings for breadth of assortment as items became easier to find (for both customers and employees). In addition to reducing clutter, having fewer products meant higher stock levels (due to both better demand forecasting and better operational execution) and lower prices for customers.

Quest Diagnostics offers another example of the power of subtraction. When the lab services company realized that its overwhelmed call centers were actually costing it business, one of the first changes it made was to reduce the call volume. It found, for example, that physicians would rather receive normal test results by fax than by phone. By subtracting the task of reporting normal results by phone, Quest reduced outbound calls by 16%. It then installed a fax capability on the phone reps' computers, thus subtracting the need for them to get up from their desks to go use a separate fax machine. The result of these and other subtractions was a decline in the number of calls and better customer service.

Companies that made winning with customers their primary objective have been able to subtract effectively.

Enabling Upstream Subtraction

Many executives are aware of the troubles caused by their own self-inflicted complexity and blame it on pressure to meet short-term goals. "Financial pressures lead us to be all things to all people," one executive said during a Good Jobs Institute workshop. "And that's not a strategy." Even so, many are afraid to simplify for fear of losing sales.

Other executives feel trapped by their own incentives — pay and promotion — and their siloed structures that won't let them make what they can see would be the best decisions for customers, for employees, and for company performance. A logistics executive might recognize that improving the predictability of deliveries could improve store productivity and sales, but if their incentives are tied to minimizing costs, and if they are siloed from decision makers who manage other aspects of the business, a delivery schedule that inconveniences stores may be their only viable option.

At some companies, we've seen upstream subtractions remain undone simply because they haven't been prioritized. At one financial services call center, almost a third of the call volume concerned confusing bill-payment procedures. Everyone knew that fixing that procedure would improve customer experience and rep productivity, but it was never prioritized because front-line work wasn't seen as essential to increasing sales and profits.

In our experience, the companies that have made winning with customers their primary objective have been able to subtract effectively and have recognized the benefits to their bottom lines. With an end-to-end focus on the customer, they could free themselves from siloed and primarily financially motivated decision-making and move to systems- and customer-centered decision-making.

Take, for example, Mud Bay, a chain of pet stores based in Olympia, Washington. Mud Bay was open until 9 p.m. Monday through Saturday and until 7 p.m. on Sundays. Employees reported that the stores were "dead" near closing time and recommended simplifying by closing earlier. But when a Mud Bay team analyzed sales data over a six-week period, they saw that the last-hour sales were significant enough that if stores lost them, the payroll savings would barely make up for it.

In many companies, that would have ended the discussion. But Mud Bay's leadership considered how the knock-on effects of closing earlier could benefit the system: Improving employees' schedules could reduce turnover, and longer-tenured employees were more likely to acquire the product expertise needed to engage in consultative selling, which would improve customer experience and loyalty, thereby increasing sales.

So Mud Bay decided to reduce its hours. Instead of declining, same-store sales grew a healthy 13% compared with the previous year. Since 2017, Mud Bay has reduced hours even more — by 16%, all told — with no drop in sales.

The Effects of Upstream Subtraction

Upstream subtraction can make a huge difference in companies' ability to reduce turnover — the root cause of many performance issues — and improve customer loyalty. When I studied Mercadona, turnover was less than a tenth of the grocery industry average. Sam's Club reduced hourly workers' turnover by 25%. Mud Bay reduced turnover by 35%. Quest Diagnostics reduced turnover by more than 50%. These studies are described in detail in my book *The Case for Good Jobs*.

Upstream subtraction helps reduce turnover for several reasons. Employees feel more pride in their work because they can do a much better job; when Mercadona's employees didn't waste their time on tedious price changes, they had more time to help customers. It also allows the company to invest more in its people. From 2014-17, Mud Bay, a company with a profit margin of only 2%, was nevertheless able to raise pay levels by 24% for front-line employees. In 2019, Sam's Club increased wages for thousands of employees, including meatcutters, bakery specialists, and team leads, by $5 to $7 an hour, from a base of $15 an hour.

Subtracting variability in workload also makes stable schedules possible. Consistent workloads enabled Mercadona to operate with a higher percentage of full-time employees (85%) who had consistent schedules. Mud Bay was able to increase the percentage of employees who worked more than 30 hours a week from 69% to 82%. Sam's Club increased the percentage of full-time employees by 13% within two years and created consistent schedules.

Upstream subtraction along with increased investment in people creates momentum.

Upstream subtraction along with increased investment in people creates momentum. As companies get on a virtuous cycle of lower turnover and better performance, they can invest more in people. In 2022, Mud Bay was able to pay all of its employees a living wage, based on MIT's living-wage calculator. From 2020-22, Sam's Club increased hourly pay by 18%.

These changes help retain managers, too. Even well-paid managers tend to burn out from high workloads dictated by headquarters and the stress of managing frustrated, unmotivated front-line workers. Thanks to subtraction and reduced turnover, they now have more time to hire the right people and develop them. On-the-job training can now be performed by more experienced people, with the knowledge that new trainees are likely to remain in the job.

Reducing the clutter of nifty but unnecessary products, tools, discounts, reports, communications, and processes leaves companies with fewer things to standardize and train employees in. Workforce stability allows leaders to involve employees in making decisions that affect their work by drawing on their experience and knowledge of the job and the customers, thereby boosting productivity and morale.

Steve Jobs famously said that he was as proud of what he hadn't done as he was of what he had done. If more companies took that approach, we would see better jobs, more satisfied customers, and better individual and corporate performance. ■

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GLOBAL BUSINESS

International Tax Reform the C-Suite Can't Ignore

For decades, nations competed to attract businesses with tax breaks. A new agreement among OECD countries is about to change that.

By Danielle Rolfes, Dan Prud'homme, and Vinod Kalloe

By the end of this year, the global tax system will experience a historic shift that will have implications for multinational enterprises (MNEs) that go far beyond their tax departments. The upcoming regulatory changes will impose significant compliance burdens on MNEs and should prompt C-suites to reconsider whether their global operating models remain fit for purpose.

For decades, countries have competed intensely to attract MNEs' operations by cutting their corporate tax rates and narrowing their tax base. But this competition is about to change significantly, now that 138 jurisdictions, representing nearly 95% of the global gross domestic product, have reached an agreement to put a floor on global tax competition. The agreement — part of an initiative led by G-20 countries and the Organization for Economic Cooperation and Development (OECD) — requires that all large MNEs be subject to a minimum tax of 15% in each foreign country in which they operate. Key jurisdictions, including all members of the European Union, are expected to apply the new rules in 2024.

A Brief History of Global Corporate Taxation

The new tax agreement represents a watershed moment for global business regulation. Consider that the average corporate income tax rate among OECD countries was 47% in 1980, and had declined to 23% in 2021, in what various policy experts referred to as either a "race to the bottom," or the result of healthy competition.

In addition to the downward trend in corporate tax rates, the complexity of taxing cross-border income, combined with some countries' intentional efforts to attract mobile income (meaning income that can easily be shifted to low-tax jurisdictions, such as the returns on intangible property and intercompany financing), have long meant that some MNEs' profits could legally escape taxation altogether or be taxed only very lightly. Companies have long used complex tax structures with names like the "double Irish" and the "Dutch sandwich," to exploit differences in countries' characterizations of payments and entities to create stateless income. This has fed a perception among some lawmakers and the public that MNEs have been gaming the system to avoid paying their fair share. This sentiment, and many countries' need for revenue following the global financial crisis of 2008-09, resulted in significant political momentum to reach a deal to address the ability of MNEs to engage in tax-base erosion and profit shifting (BEPS).

The G-20/OECD BEPS project was born from this movement. Its first action plan emerged in 2015: BEPS 1.0 was aimed at the techniques that MNEs were using to shift profits to low-tax countries. It largely blocked MNEs from using hybrid entities and payments to create stateless income and made it more difficult to separate an MNE's profits from its underlying value-creating activities. Although this latter change was intended to make companies report larger profits in the high-tax countries where their workers and headquarters were located, some MNEs responded by moving more value-creating activities into low-tax jurisdictions. Thus, BEPS 1.0 did not end the benefits of strategic tax planning, but it did require more operational considerations, such that minimizing a company's effective tax rate generally required its tax department to insert itself into decisions about where the company located key decision makers and functions. This meant that tax savings often came at the cost of operational efficiency.

Given that companies were still able to maintain relatively low levels of taxation via their business models and low-tax jurisdictions, a new G-20 mandate arose in 2017 for the OECD to address remaining BEPS issues. Termed BEPS 2.0, this new phase includes a Pillar One plan, which aims to reallocate a portion of an MNE's profits to the market jurisdictions where its customers are located, and a Pillar Two plan that sets a global minimum level of tax on an MNE's income arising in each jurisdiction where it operates.

Pillar Two takes direct aim at the so-called race to the bottom in corporate tax rates, with detailed rules that lay out a coordinated system of global taxation. The rules require MNEs with revenues above 750 million euros ($815 million) to pay a corporate income tax of at least 15% in every country in which they operate.

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Compliance is ensured by granting other countries the right to impose a "top-up" tax on an MNE's profits in any country with an effective tax rate below 15%.

Consider an MNE operating in several countries, including a country with a 10% tax rate. Who gets the extra 5% top-up tax? First priority goes to the jurisdiction of the MNE's ultimate parent company. If that jurisdiction does not adopt the rules, top-up priority next goes to the jurisdiction(s) in which the MNE's intermediate holding companies are located. If the MNE is not owned directly or indirectly by a company located in a jurisdiction that has implemented the rules, the top-up tax is split among all jurisdictions where the MNE operates that have implemented the rules, based on each jurisdiction's share of the MNE's global assets and payroll. Thus, by design, an MNE cannot avoid the rules by being headquartered in a country that does not implement them. Because of the rules' strict global design, the OECD expects them to increase global tax revenue from corporate income taxes by $220 billion per year.

In December 2022, the EU reached an agreement to make the minimum tax rules effective in all 27 member states by Jan. 1, 2024. South Korea also recently passed similar legislation, and Australia, Canada, Hong Kong, Japan, New Zealand, Singapore, Switzerland, the U.K., and others have publicly indicated that they will start the process to implement the rules. A divided U.S. Congress means that the United States will likely be an outlier and not implement the new rules anytime soon. However, as mentioned, that inaction will not stop other countries from imposing top-up taxes on a U.S.-based MNE's low-taxed operations wherever they are located. This will potentially undercut the effectiveness of many existing U.S. tax breaks, such as the R&D tax credit, unless they are restructured.

How Corporations Should Prepare

C-suites should respond to this new global tax landscape in four ways, starting with understanding how much more in taxes their company will pay and managing investor relations accordingly. For some MNEs, the greatest costs will primarily come from the added administrative burdens of compliance. Other MNEs, however, might also see their effective tax rates increase significantly and will need to carefully manage investor expectations.

Second, the C-suite should reconsider existing supply chains and global organizational structures that were originally designed to minimize taxes. A 15% floor on the tax rate substantially reduces the returns on cross-border tax planning. That planning often required MNEs to adopt complex legal structures and product flows to locate profits in low-tax jurisdictions, even though their key value drivers and customers were located elsewhere. For example, tax planning that requires the title to tangible goods to be sold through a chain of multiple legal entities can add significant complexity to an organization's enterprise resource planning (ERP) systems, as well as value-added taxes and customs compliance. Top managers will also want to look closely at unwinding inefficiencies that may have arisen when tax considerations created pressure to locate value-creating activities in low-tax jurisdictions.

When the global minimum tax is fully implemented, these types of complex organizational structures may no longer be justified. Some structures will still be advantageous: Effective tax rates in many countries significantly exceed 15%, leaving room for arbitrage. The point is that MNEs should reevaluate whether their prior tax-oriented organizational choices are still worth their operational complexity and inefficiency, considering that the tax benefits likely will be reduced. This exercise may be particularly salient to MNEs that are already undergoing transformation, including those aiming to simplify their supply chains and other operations.

Management should consider: How would the MNE have organized itself without regard to taxes? What are the real costs of these existing structures — in terms of maintaining additional legal entities, complexity and operational inefficiency, reputational risk, and the risk that they will be challenged by tax authorities?

The third way C-suites should respond to these tax changes is to consider how to ease the compliance burden that may overwhelm their tax and accounting departments. Many tax departments, including those in MNEs that primarily operate in high-tax jurisdictions, have bemoaned the difficulty of accessing the internal data that will be required for compliance with the new global rules. They don't see how they will be able to comply with their current staffing. Companies overhauling their ERP systems should consider bolt-on projects to automate some of the compliance. Getting this done quickly will require buy-in from top management.

Lastly, companies should consider ramping up lobbying efforts. We anticipate a new "race to the bottom" in other types of government incentives to attract business activity to jurisdictions that will not trigger the top-up tax under the new OECD rules. MNEs can seize this moment to lobby for other supportive policies to partially offset the tax changes. For example, governments are already mulling redesigning the type and size of direct grants and subsidies, guarantee mechanisms, and risk capital support measures that they offer for local research and development activities. They are also redesigning their tax incentives for commercializing locally conducted research. An extra push from MNEs now can mean the difference between the rollout of favorable policies or limited or no policies in this space. ■

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BRAND STRATEGY

Balancing Valued Tradition With Innovation

When your product is a beloved classic, how do you update it to attract new customers?

By Giulia Cancellieri, Simone Ferriani, and Gino Cattani

Sooner or later, most successful companies face the challenge of updating a cherished old product. Make no changes, and you risk becoming irrelevant to new customers. Change too much, and you may alienate your most loyal customers.

So how do you leverage a historically strong brand with sensitivity to heterogeneous customer preferences? To explore this question, we studied Italian opera companies, which face this dilemma every season. Many of the best-loved operas in the repertoire are more than 150 years old, and the most devoted operagoers have fairly traditional tastes. However, if opera companies hew to their preferences, they may limit their cultural relevance and fail to develop new audiences.

Our analysis of ticket sales for 2,627 Italian opera productions from 1989 to 2011, and interviews with 15 artistic directors of opera houses, yielded some insights into successfully managing the tension between tradition and innovation that can be applied by anyone with a beloved product they need to update.

Requiem for a New Coke

The more iconic the product, the more challenging it is to update, as we saw with the saga of "new Coke," Coca-Cola Co.'s ill-fated attempt in 1985 to relaunch its flagship beverage with a sweeter taste. Consumers in blind taste tests had endorsed the change, but after customers protested, the company had to continue selling the classic version of the product alongside the new one.

Opera companies, too, perpetually court disaster when they try to update beloved works. Consider two recent productions — of Puccini's *Madame Butterfly* and Bizet's *Carmen* — that were reinterpreted in novel ways but were received very differently. Loyal operagoers liked *Madame Butterfly* relocated to contemporary East Asia. But they panned the new *Carmen*, which ended with the title character killing Don José, her estranged lover, instead of being killed by him as in the original opera.

To understand the differences in how these and other updated productions have been received, we assembled a detailed database of the staging strategies of thousands of performances and then determined whether each production took a robust or radical approach to reinterpreting the original. Robust interpretations modify the peripheral aspects of an opera (its visual staging) but preserve its central features (music and dramatic contents). In contrast, radical interpretations modify the very essence of a work by manipulating the main (dramaturgical or musical) characteristics of operas, as well as peripheral ones.

Our statistical analysis of attendance figures revealed that audiences desire some degree of change: Opera houses taking a robust interpretation approach increased their attendance by almost 9% compared with interpretations that reproduced the original version faithfully. But counter to directors' feelings that radical interpretations invited audience dissent, we found that such productions had an even greater impact, increasing attendance by 14%.

So were the artistic directors we talked to wrong in their assessments? Yes and no. Rerunning our analyses separately for season ticket holders and single-ticket attendees revealed an intriguing twist: While season ticket holders are strongly drawn to robust interpretations, exemplified by a 21% increase in their attendance, such productions reduce single-ticket holders' attendance. In other words, the overall positive effect of robust interpretations is powerfully driven by season ticket holders, whose appreciation for such interpretations more than compensates for the lack of it among single-ticket purchasers. The opposite holds true with radical interpretations: While season ticket holders respond negatively to them, single-ticket holders respond exceptionally well, increasing their attendance, on average, by 17.6%. Thus, it is single-ticket holders who drive the overall positive effect of radical interpretations.

Because of this heterogeneity in audience preferences, opera houses face a fundamental trade-off: The best strategy for leveraging a cherished tradition with one customer segment might be unpopular with another. For opera companies, the key business question comes down to the relative importance of season ticket holders to their revenue model as opposed to

Paul Giovanopoulos / theispot.com

attracting new customers, who may have, at least initially, different expectations and a more open attitude toward the treatment of traditional operatic material.

Who Pays the Piper?

Organizational leaders in many industries are routinely challenged to make design choices that revive a cherished past by connecting it to the present or future. Our study yielded four general recommendations for how to best leverage rich legacies when updating products.

1. Use tradition as a resource for innovation through reinterpretation. Some executives may be tempted to dismiss the past and appeal to current tastes. Others may venerate tradition and avoid changing a thing in response to market conditions. In both cases, tradition is more a constraint than an enabling factor.

But that does not have to be the case. Our findings suggest that managers should view tradition and innovation as mutually reinforcing rather than opposing and engage in *reinterpretative efforts* to unlock the value of this duality. The retro style of Fiat's award-winning 2007 redesign of the classic Fiat 500 was a modernization of Dante Giacosa's legendary 1957 rear-engine model. Brand traditions, when reinterpreted, can become a resource for innovation that responds to the shifting preferences of evolving markets.

2. Leverage your traditional visual identity. Honoring the essential design elements of a product revered as a classic while adding modern touches can reassure customers that the original product is still valued even as it becomes more relevant to forward-looking consumers. Louis Vuitton enlisted celebrated artist Takashi Murakami to reinterpret its iconic Speedy handbag — first introduced in 1930 — by printing a cherry blossom pattern on it, thus infusing an aging product with the modern kawaii pop-art style. Both robust and radical interpretation strategies challenge the form in which the tradition is embedded.

Our findings suggest that through robust interpretation strategies, managers can preserve the core identity features of a traditional brand and use novel product forms to moderately refresh it. In contrast, radical interpretations challenge tradition more deeply by encapsulating new core elements into novel product forms. Reinterpreting traditional products through stylistic changes that update their form is a way to pursue innovation by *leveraging products' visual language* without denying their historical heritage.

3. Tailor your interpretation strategy to the target audience. Executives may believe that only moderate or incremental changes to classic products will be accepted by the market. Instead, our study revealed that both robust and radical interpretations can be effective product strategies, depending on the target audience.

In the end, company leaders must think carefully about how deeply they are willing to challenge their legacy. This choice should be informed by an accurate understanding of how important core customers and new customers are to their strategic vision, given that these groups may vary significantly in their expertise and expectations. Our findings suggest that if the priority is to cultivate die-hard customers and strengthen their loyalty without stifling innovation and change, then preserving core features of the traditional offering while changing peripheral ones might be the way to go. But if the acquisition of new customers is the strategic goal, then making more profound alterations to an offering may be more effective in the short run. Flexibly matching the right interpretation strategy with the right audience can help savvy managers address the need for renewal while remaining sensitive to the heterogeneity of their market.

4. Bridge different customer groups by balancing interpretation strategies. If executives' goal is to bridge the divergent tastes of loyal and new customers, they should consider balancing robust and radical interpretation strategies in their product positioning and communication choices. For example, opera houses could develop loyalty-building programs, such as a subscription package that includes a higher number of productions with robust interpretations to appeal to longtime customers and another package strategically targeting new customers with radical interpretations.

Company leaders might consider using different outlets to showcase and distribute robust and radical interpretations of their offerings to avoid alienating customers through either approach. This allows the organization to position itself and its offerings differently based on the divergent demands of heterogeneous audiences. Customers will then identify the organization with one or the other interpretative approach, even when different strategies are adopted to reinterpret tradition. Instead of mixing robust or radical interpretations together in their promotional and communications materials, organizations could strategically alternate robust and radical interpretations to draw the attention of different audience segments.

MANAGING THE INNOVATION-TRADITION trade-off is a crucial challenge for businesses carrying the weight of revered historical legacies. Once executives understand that tradition is not merely a constraint but a resource that can be skillfully managed in reinterpreting the past to suit the needs of the present, they can confidently navigate this trade-off, make the necessary changes in strategic focus, and tailor the right interpretation strategy to the right audience. ■

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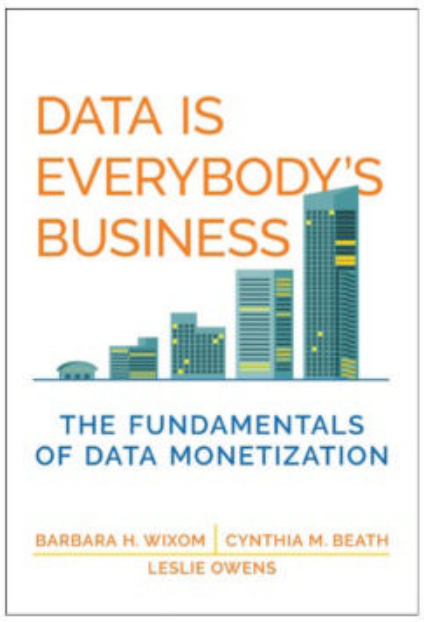

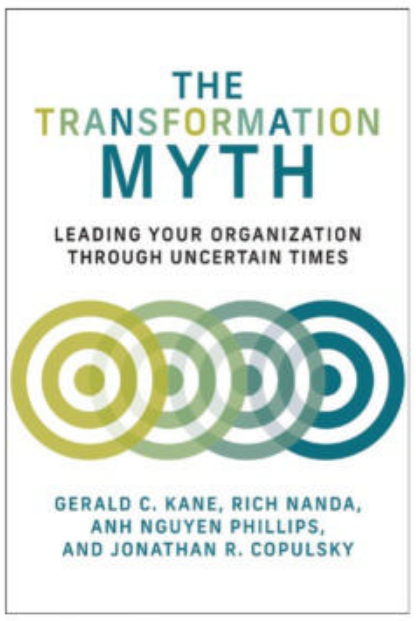
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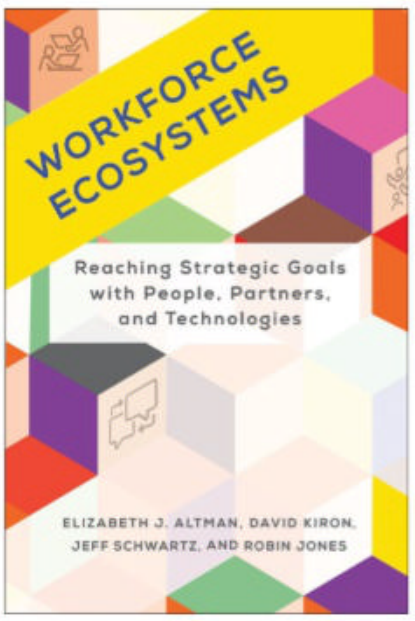
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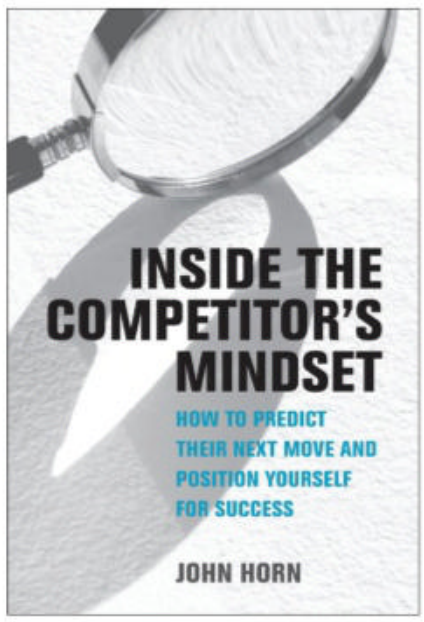

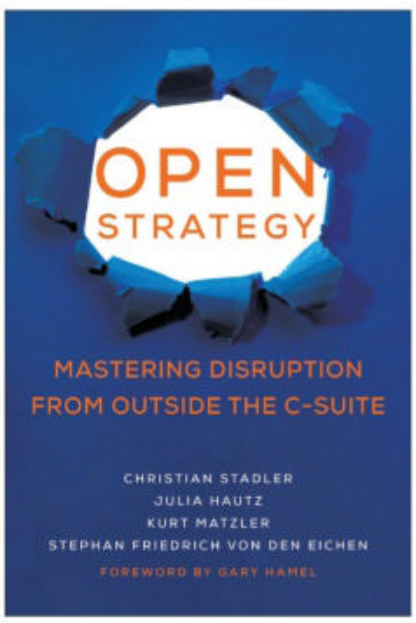

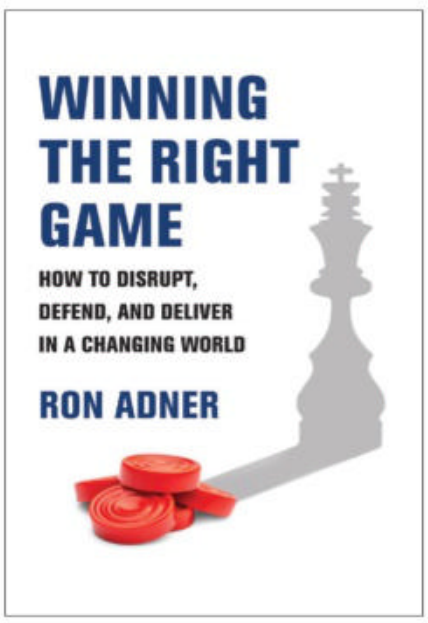

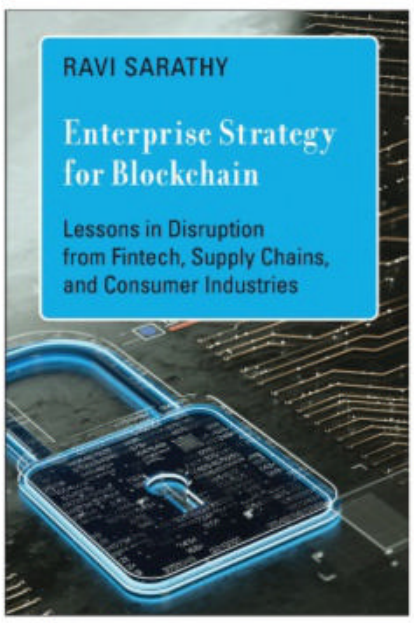
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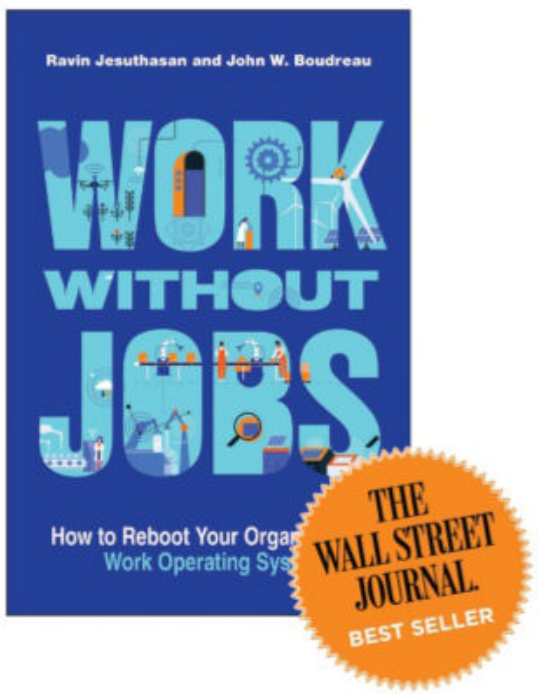

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Navigating Risk and Disruption:
Skills and Tactics for an Uncertain Future

Three years ago, organizations around the world were caught flat-footed by a long-predicted risk whose emergence was no surprise to anyone who had been paying serious attention to global public health issues. The pandemic brought home the importance of taking a broader, more systemic view of potentially disruptive forces and events — and made *resilience* a corporate buzzword.

Ananya Sheth and Joseph V. Sinfield take a systems theory approach to their work on risk and resilience, seeing enterprises as complex adaptive systems in which resilience is not just a theoretical concept but a dynamic property. Their joint five-year research stream, which included work supported by the National Science Foundation, yields a deep dive into how leaders can gain a more comprehensive view of risks, with novel frameworks and tools for thinking through and mapping out risk intelligence. The new practices that they describe can help leaders identify levers that can reduce degrees of risk and find pathways through disruptive events to achieve sustained value generation.

That's something professional services firms have largely managed to do, despite multiple pundits' gloomy prognoses for this sector over the past decade. But management consulting and law firms were not the sitting ducks that they were assumed to be: Julian Birkinshaw and David Lancefield recount how these businesses dodged new competitors and wielded new technologies that might otherwise have threatened their value propositions. The insights drawn from their research offer important lessons for businesses in other sectors on how to ride rather than be swamped by giant waves of change.

Sophisticated analytics — in particular, dynamic predictive models — are a critical tool for enterprises that need to model risk in fast-changing environments. But as Vern L. Glaser, Omid Omidvar, and Mehdi Safavi explain, managers who rely on such models without attending to some critical management and organizational issues can fall victim to what the authors call *algorithmic inertia*. They dissect what went wrong with the subprime mortgage ratings model used by Moody's in the run-up to the 2008 financial crisis and identify the four most significant causes of such failures. Their recommendations for better data science practices should be taken to heart by leaders who need to tap advanced analytics to manage uncertainty amid rapidly changing business conditions.

— *The* MIT SMR *Editors*

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Predictive Models Can Lose the Plot. Here's How to Keep Them on Track.

Algorithmic inertia can result in guidance that leads businesses astray.

By Vern L. Glaser, Omid Omidvar, and Mehdi Safavi

Simon Prades

ORGANIZATIONS ARE INCREASingly turning to sophisticated data analytics algorithms to support real-time decision-making in dynamic environments. However, these organizational efforts often fail — sometimes with spectacular consequences.

In 2018, real estate marketplace Zillow launched Zillow Offers, an "instant buyer" arm of the business. It leveraged a proprietary algorithm called Zestimate, which calculates how much a given residential property can be expected to sell for. Based on these calculations, Zillow Offers planned to purchase, renovate, and resell properties for a profit.[1] While it had some success for the first few years, the model failed to adjust to the new dynamics of a more volatile market in 2021. Zillow lost an average of $25,000 on every home it sold in the fourth quarter that year — resulting in a write-down of $881 million.[2]

This is an example of what we call *algorithmic inertia*: when organizations use algorithmic models to take environmental changes into account but fail to keep pace with those changes. In this article, we explain algorithmic inertia, identify its sources, and suggest practices organizations can implement to overcome it.

A Credit-Rating Catastrophe

To understand the phenomenon of algorithmic inertia, we conducted an in-depth study of another organization that failed to respond to changes in the environment: Moody's, a financial research firm that provides credit ratings for bonds and complex financial instruments such as residential mortgage-backed securities (RMBSs). These securities aggregated bundles of individual mortgages into distinct tranches with unique characteristics during the period leading up to the global financial crisis of 2008.[3]

Moody's made a concerted effort to account for environmental changes in its credit ratings by developing a proprietary algorithmic model in 2000 called M3 Prime. The model analyzed data about properties, mortgage holders, and the economy to estimate two parameters central to calculating a credit rating: expected losses for the mortgage pool and the loss coverage protection required for a security to maintain a AAA rating. An analyst would present a recommendation to Moody's credit rating committee, which assigned a publicly posted rating for the security. Moody's monitored these ratings and upgraded or downgraded RMBSs as the environment changed. The M3 Prime model achieved early success, so in 2006, Moody's expanded its scope of algorithmic analysis by introducing a derivative model, M3 Subprime.

Between 2000 and 2008, Moody's provided credit ratings for thousands of RMBSs, but it ended up downgrading 83% of AAA-rated mortgage-backed securities valued at billions of dollars by 2008. The U.S. government, along with 21 states and the District of Columbia, held Moody's responsible for the role that its inflated ratings of those and other products played in precipitating the financial crisis. In 2017, the agency agreed to pay $864 million to settle the allegations.[4]

This is a particularly illustrative example of algorithmic inertia with devastating societal consequences. Moody's decisions offer an excellent context for exploring algorithmic inertia because the organization was explicitly responsible for analyzing environmental changes as part of its core service. Moreover, we were able to access detailed information about its algorithmic model from a report produced by the Financial Crisis Inquiry Commission that includes extensive interviews conducted under oath with Moody's executives who were involved in the business at the time.[5]

Our analysis enabled us to identify the most significant contributing factors to algorithmic inertia — buried assumptions, superficial remodeling, simulation of the unknown future, and specialized compartmentalization — described below. (See "Four Sources of Algorithmic Inertia," p. 22.)

Buried assumptions. Failing to revisit fundamental assumptions undergirding inputs of the algorithmic model in light of changes in the environment contributes significantly to algorithmic inertia. For example, loan originators were increasingly underwriting mortgages based on lower credit standards and substantially less documentation than before. So an original assumption undergirding Moody's M3 Prime model — that the technology that mortgage originators were using to streamline the loan application process was also enabling a more accurate

Moody's ended up downgrading 83% of AAA-rated mortgage-backed securities valued at billions of dollars by 2008.

THE RESEARCH

- The authors took a historical case study approach to explore the causes and consequences of algorithmic inertia, centering on the use of algorithms by Moody's to rate mortgage-backed securities before the 2008 financial crisis.
- They drew on government reports on official investigations into the financial crisis, which included extensive witness testimony that enabled them to effectively reconstruct changes to the Moody's credit rating routine during the years prior.
- They gained useful information about the Moody's credit rating routine from an investigation of select credit rating agencies performed by the U.S. Securities and Exchange Commission, as well as from a report by the Securities Industry and Financial Markets Association Credit Rating Agency Task Force.
- They also gathered historical data from Moody's, such as annual reports and public statements, and reviewed media coverage.

assessment of underlying risks — wasn't modified to reflect the changing lending environment. The managing director of credit policy at Moody's told a federal inquiry panel that he sat on a high-level structured credit committee that would have been expected to deal with issues like declining mortgage underwriting standards, but the topic was never raised. "We talked about everything but … the elephant sitting on the table," he said.[6]

Moody's model also assumed that consumers' FICO credit scores were the primary predictive factor in loan defaults. But the quality of this data input significantly diminished over time: As the use of these credit scores became increasingly common, individuals found ways to artificially inflate them. As a result, low- and no-documentation mortgages carried latent risk that was not being taken into account in Moody's algorithmic model.[7]

Superficial remodeling. This phenomenon occurs when organizations make only minor modifications to the algorithmic model in response to substantive changes in the environment. At Moody's, some major changes to the environment included a growing number of loan originators, increasingly low-quality mortgages, and an unprecedented decline in interest rates.

Moody's response to these changes was to seek to capture more business in the rapidly growing market, so it fine-tuned the model to be "more efficient, more profitable, cheaper, and more versatile," according to its chief credit officer — not to be more accurate.[8] When it modified M3 Prime to introduce the M3 Subprime model, it extrapolated loss curves for subprime loans based on premium loans rather than developing fresh loss curves for subprime loans.

Simulation of the unknown future. Relying on an algorithmic model to produce viable scenarios for the future environment can also leave organizations vulnerable to algorithmic inertia. Moody's constructed a simulation engine featuring 1,250 macroeconomic scenarios that enabled it to estimate possible future losses based on variations in economic markers such as inflation, unemployment, and house prices. However, the simulation engine was limited by its underlying structure and assumptions, so analysts did not consider the changes that were occurring, did not update scenarios, and failed to accurately represent the changing macroeconomic environment. Based on the belief that detailed performance histories could more precisely reveal causal links between economic stresses and loan behavior, Moody's used estimates based on historical parameters rather than expected pool loss distributions to examine behavior in stress scenarios.[9]

Specialized compartmentalization. This situation arises when experts in different domains are involved in an algorithm's design and use and there is no overarching single ownership or shared understanding of the model. At Moody's, responsibilities for the credit rating routine were divided between the domain experts (credit rating committee members) who used the quantitative model and the quantitative analysts who had developed it.

Because ownership and use of the model were distributed, and Moody's didn't strictly define how to use it, credit rating committee members established ad hoc rules to adjust the results of the model when its outputs didn't conform to what their expert judgment led them to believe it ought to produce. Model outputs weren't considered final; rather, the models were seen as tools to be used in conjunction with other approaches, and there was much divergence in how different ratings committees made their determinations.

The models were developed and modified by individuals who were distant from the domains in which they would be applied; disparate groups of domain experts then used the models in inconsistent

Four Sources of Algorithmic Inertia

Organizational and process issues can result in algorithms that don't keep up with environmental changes in the decision domain.

Buried Assumptions	The organization uses legacy data inputs for the algorithmic model despite recognizing significant changes in the environment.
Superficial Remodeling	The organization makes only minor modifications to the algorithmic model in response to substantive changes in the environment.
Simulation of the Unknown Future	The organization overconfidently relies on the algorithmic model to predict the future environment.
Specialized Compartmentalization	Responsibilities for the algorithmic routine are divided between team members in distinct roles based on their specialized expertise.

ways without understanding their underlying logic. The managing director for rating RMBSs described the model as so technically complex that few people understood how it worked.[10]

This issue is at the heart of what makes algorithmic inertia hard to tackle: The models and algorithms are often so complex that domain experts can hardly grasp the details of their functioning, while data scientists are disconnected from how their models are being used in the real world.

Develop Practices That Combat Algorithmic Inertia

We have described how each of the causes of algorithmic inertia played out in Moody's use of an algorithmic model to dynamically incorporate changes in the environment into its credit ratings. Despite recognizing flaws in the model and making active attempts to change it, the organization was unable to effectively adapt to the environment, thereby substantially contributing to the 2008 financial crisis.

To prevent similar degradation of critical algorithms' predictive value, we suggest that organizations implement the four practices described below. (See "Keeping Algorithms Relevant," p. 24.)

Expose data and assumptions. Organizations should articulate and document the data used in their algorithmic models, including data sources and fundamental assumptions underlying their data selection decisions, which can have deleterious effects.[11] Models often include operationalizations of many concepts, and it is easy for organizations to lose track of these parameters, which can be buried in layers of software code. Parameters representing the environment need to be documented to ensure that they remain visible. Similarly, the fundamental assumptions undergirding the model should be articulated and periodically revisited.

In a dynamic environment, it's important to be willing not just to make incremental changes to a model but to fundamentally overhaul it if necessary.

Moody's used a data set on premium mortgages to train a model that was intended to be used to rate RMBSs composed of subprime mortgages. Initially, this might have been a reasonable choice due to the availability of data. But when a model's initial data set isn't refreshed, algorithmic inertia can result. As the Moody's case suggests, data is never completely accurate, objective, and flawless. Therefore, making the sources of data and assumptions about those sources transparent to algorithm users, and continually reflecting on the appropriateness of that data, are critical practices for organizations seeking to avoid algorithmic inertia.

Organizations must keep data sources clearly organized and evaluate them periodically. Different data sources have different qualities and characteristics. Ensuring that these sources are distinguished from one another before they are fed into algorithmic models, processed, and constantly compared against one another enables data scientists to identify and eliminate algorithmic inertia sooner rather than later.

The assumptions underpinning the use of an algorithm should also be documented and articulated. Any attempt to model the environment involves quantification — transforming aspects of reality into numerical data. Such quantification inevitably involves making assumptions about how the environment works. However, while quantification is necessary for algorithmic models to work, details about how it is performed can get lost in the complex process of designing and using algorithmic models. Therefore, maintaining a living record of such assumptions may prevent the emergence of algorithmic inertia.

Periodically redesign algorithmic routines. Organizations should regularly redesign — and be willing to overhaul — their algorithmic model and reconsider how it fits into broader organizational routines. The initial design of an algorithmic model can take a lot of work, and it is natural for an organization to want to reap the benefits of that work. However, in a dynamic and quickly changing environment, it's important to be willing not just to make incremental changes to a model but to fundamentally overhaul it if necessary.

Of course, organizations face a trade-off when it comes to overhauling an algorithmic routine: It can be very expensive to completely re-architect an algorithmic model. However, the consequences of failing to do so can be disastrous.

For example, when Moody's had to rate an increasing number of subprime-dominated RMBSs,

the organization chose to incrementally modify the M3 Prime model. However, it may have been more effective to specify the distinctions between the prime and the subprime markets and do a deeper overhaul of the original model. In addition to rethinking the algorithmic model itself, an organization can consider how it is deployed in practice: Hypothetically, Moody's could have applied the M3 Prime model differently to different types of RMBSs — perhaps simply requiring more human intervention for tranches composed of lower-quality loans.

Redesigning and overhauling an algorithmic model is contingent upon understanding what organizational processes interrelate with the model and analyzing the implications that changes in the environment have for it. If it becomes clear that either the model or the processes that it relies on or feeds into have been rendered obsolete or ineffective, an overhaul should be seriously considered.

Assume that the model will break. It can be dangerous for an organization to think of potential future scenarios only through the prism of what algorithmic models predict: All assumptions embedded in a model limit the potential futures that can be considered. To address algorithmic inertia associated with the simulation of an unknown future, it is important to assume that the model will break. Consider scenarios beyond the scope of the algorithmic model; this requires challenging predictive assumptions as well as presuming that the model is fundamentally flawed.

An active practice of considering scenarios that are *outside* the model can help motivate and inspire the prior two practices — exposing data and assumptions and periodically redesigning algorithmic routines — by forcing team members to actively consider the limitations of algorithmic models.

One particularly useful approach might be to make use of qualitative predictions of the future instead of quantitative predictions that rely on available data from the past. These forms of scenario planning offer opportunities to consider radically different visions of what the future may hold. This might also entail developing hybrid algorithms that do not precisely rely on past data to predict scenarios but also embed in them qualitative measures and expert rules introduced by domain experts.

Build bridges between data scientists and domain experts. Organizations must create processes for data scientists and domain experts to work closely together to design their algorithmic routines.[12] Practically speaking, data scientists and AI specialists approach problems very differently than domain experts do. Domain experts focus on organizational routines and idiosyncratic situations, whereas data scientists focus on developing generalizable constructs based on mathematical principles. To overcome algorithmic inertia, data scientists and domain experts must work closely together to understand how characteristics of organizational routines and idiosyncratic situations map to the mathematical parameters used in an algorithmic model.

When the worlds of data scientists and domain experts are completely separate, there is also the danger that data scientists and domain experts will shift responsibility by superficially trusting each other's work. Such assumptions can actually prevent crucial dialogue between the two worlds. For instance, Moody's ended up subverting the results of its credit rating model because the credit rating analysts didn't attempt to understand why the model might be generating results that didn't fit with their intuitions. Building bridges between data scientists and domain experts enables domain experts to obtain an intuitive grasp of how the algorithmic model works. Such

Keeping Algorithms Relevant

Organizations can increase the likelihood that algorithmic tools will effectively adapt to changes in the environment by following four practices.

Expose Data and Assumptions	Articulate and document the data and the fundamental assumptions in the algorithmic model.
Periodically Redesign Algorithmic Routines	Periodically redesign — and be willing to overhaul — the algorithmic model and how it fits into broader organizational routines.
Assume That the Model Will Break	Actively consider scenarios outside the scope of algorithmic models by challenging predictive assumptions, assuming that the model will be fundamentally flawed, and envisioning qualitative alternative predictions of the future.
Build Bridges Between Data Scientists and Domain Experts	Ensure that data scientists and domain experts work closely together to design the algorithmic model and the organizational routine in which it is to be embedded.

When data scientists and domain experts are siloed, there is a danger that they will shift responsibility by superficially trusting each other's work.

common ground could enable organizations to create and use models that better adapt to changes in the environment.

One structural bridge-building practice that organizations can use to facilitate communication between data scientists and domain experts is establishing a position such as a product manager. This should be held by one individual with both domain and data science experience who has direct responsibility for overseeing algorithmic routines. For example, some data experts have called for the creation of a new organizational structure that includes an "innovation marshal" role — someone who is respected by both data scientists and field experts.[13] Given their knowledge and expertise in both areas, these people can gain the respect of the organization by developing and maintaining "high-bandwidth, bidirectional communication channels" that help ensure that algorithmic routines are able to adapt to environmental changes.[14]

Another bridge-building practice is called *model explainability*: describing the algorithmic models in a practical and comprehensible manner. For data scientists, such explainability can facilitate access to the expert knowledge needed to counteract the sources of algorithmic inertia; for domain experts, such explainability can help them develop a deep and intuitive understanding of how the model takes environmental changes into account. Model explainability establishes common ground between two groups of professionals who have different types of expertise. Such practices enable organizations to build bridges instead of just talking about them.

ORGANIZATIONS SEEKING TO REAP THE benefits of powerful predictive analytics are increasingly confronting the problem of algorithmic inertia. Despite leveraging dynamic algorithms to adapt to changes in the environment, organizations may find that the results are not keeping pace with new developments. By exposing data and assumptions, periodically redesigning algorithmic routines, assuming that their models will break, and building bridges, organizations can increase the likelihood that their substantial investments in algorithmic solutions will pay off with better decision-making. ■

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Risk Intelligence and the Resilient Company

Applying a more sophisticated approach to risk management can help leaders continue to generate value through disruption and uncertainty.

By Ananya Sheth and Joseph V. Sinfield

BUILDING THE RESILIENCE OF LARGE, COMplex enterprises is critical in today's uncertain and interconnected world. At a time when a container ship grounded in the Suez Canal can bottle up 12% of the world's trade, or a virus can disrupt the global flow of commodities, components, and talent, a corporation's ability to quickly adapt in the face of unfolding events is essential to its survival and prosperity.

Business resilience is a dynamic property that is retrospectively measured by the stability and longevity of corporate value across changing contexts. In real time, it manifests in an enterprise's timely adaptation to both immediate and gradual changes in the business environment.

Our work, which employs a complex adaptive systems view of businesses, shows that resilience derives from three fundamental adaptive capacities: sensing and monitoring, to recognize emerging changes in the business environment; business model portfolio development, to build and test capabilities across operating contexts; and fundamental capability development, to drive growth with longevity and avoid corporate stall.[1] Moreover, each of these capacities hinges on the development of a capability for *risk intelligence*.

We define risk intelligence as the honed ability to rigorously interpret risks and the consequences or opportunities they pose for a company.[2] It allows leaders to see through environmental complexity and systematically identify, categorize, and interpret risks.

Simon Prades

This enables them to look beyond known risk factors and intentionally explore yet-to-be-known risks, thereby embracing rather than avoiding uncertainty. Importantly, risk intelligence brings recognition that individual risks or the forms in which they manifest matter far less than the often-shared consequences they have on a company's value exchange system — that is, the manner in which it manages, identifies, creates, conveys, delivers, captures, protects, and sustains value.[3] And finally, it provides leaders with a network view of risks that enables more effective allocation of risk mitigation resources by illuminating not just the direct consequences of risks but the manner in which they could cascade across the company's value exchange system. In this article, we break down risk intelligence into actionable elements that leaders can pursue to help toughen their organizations for the long term.

Identify, Categorize, and Interpret Risk Events

Leaders cannot accurately predict specific risk events, nor can they prepare their companies for all risks. They can, however, identify, categorize, and interpret risk events in a systematic manner that reveals how seemingly different events could have similar consequences.

The first step is to work through each business value function and identify plausible risk events that may have implications for its effectiveness. To aid in this process, we constructed an industry-agnostic inventory organizing three tiers of 99 major risk categories identified in our study in relation to individual value exchange system components. (See "A Value Function Risk Inventory," p. 28.) While inevitably not exhaustive, this resource serves as a robust starting point to identify potential risks faced by any enterprise.

Next, leaders should characterize and group risk events by their *scope* of impact, the *permanence* of the changes they induce, and the *frequency* of event occurrence. (See "Characterizing Risks," p. 29.) Leaders can then interpret the linkages between each group of risk events and the components of the company's value exchange system.

Risk categorization begins with understanding a risk event's scope, which conveys a sense of how widely a risk's effects will be felt across the range of affected stakeholders. The wide scope of the COVID-19 pandemic created supply- and demand-side effects across entire value networks, whereas narrow-scope events, such as a labor strike at an individual manufacturing facility, tend to have more bounded effects. When multiple stakeholders experience simultaneous or sequential disruptions, the increased complexity of the impact prevents the system from self-organizing to normalcy. Such circumstances also may invite interventions from sovereign states or international organizations, which can aid recovery or act as new disruptive forces.

To fully categorize risk events, leaders must also consider the permanence of their consequences. Both the pandemic and the 2021 Suez Canal blockage caused supply-side disruptions, but the permanence of the changes each event induced varied significantly. While supply chain shocks such as the canal blockage often follow a self-organizing correction mechanism in which price increases lower demand and normalize the lagging supply, the same formula cannot be applied to counter a protracted situation like the pandemic.[4] It is important to understand permanence before planning and implementing a response strategy. For example, the business interruption created by the pandemic had a scope that was broader and consequences that were of greater permanence, affecting a significantly larger set of value system functions in comparison to the more limited impact of the canal blockage.

How often a risk event occurs is important too, because the enterprise mechanisms needed to handle frequent events can be different from those employed for singular events.[5] Although companies learn from all events, their responses to those that occur repeatedly are typically converted into standard operating procedures.[6] For example, the adoption of barcodes and scanners to track and manage inventory in real time has largely eliminated stock-keeping record errors and delays resulting from mismatching data.

THE RESEARCH

- The authors undertook a holistic study of enterprise resilience that began with the extraction of corporate risk factors from two decades of 10-Ks filed by S&P 500 companies, investment analyst reports, and academic databases.
- They organized the risks into a value-centric framework composed of eight functions and 99 major risk categories; they then cross-linked the categories and functions with input from risk experts and leaders in 10 economic sectors and 26 industries to create a quantitative risk network.
- They also analyzed cybersecurity risk acknowledgment in S&P 500 10-Ks for five sectors.
- This material is based upon work supported by the National Science Foundation under grant no. 2049782.

Our scope, permanence, and frequency (SPF) framework provides a structured view that shows how a risk event itself is less important than its consequences. The framework is especially useful when multiple risk events occur at the same time, because it gives managers a common, logical approach for considering them and quickly gaining information and understanding. By then connecting those events to the company's value exchange system, managers can more easily see when diverse risks are nonetheless leading to similar consequences for its value functions.[7]

Consider a manufacturer dealing with both an overseas supplier whose products are suddenly subject to much higher tariffs due to a trade war, and the bankruptcy of a value chain partner. These risk events share SPF characteristics (the scope of both is interfirm, their permanence is reversible, and their frequency is low), and, as important, both events also affect the same value functions. The bankruptcy and the trade war are both likely to slow inputs and raise costs on the supply side and make it more difficult to meet customer demand. Both also would require the manufacturer to secure new supply sources and stabilize operational cash flow. By characterizing these potential risk events according to the SPF framework and linking them to value functions, managers can then view them more simply as groups of risks that have shared consequences for a company's specific value functions and deserve similar preparedness and response.

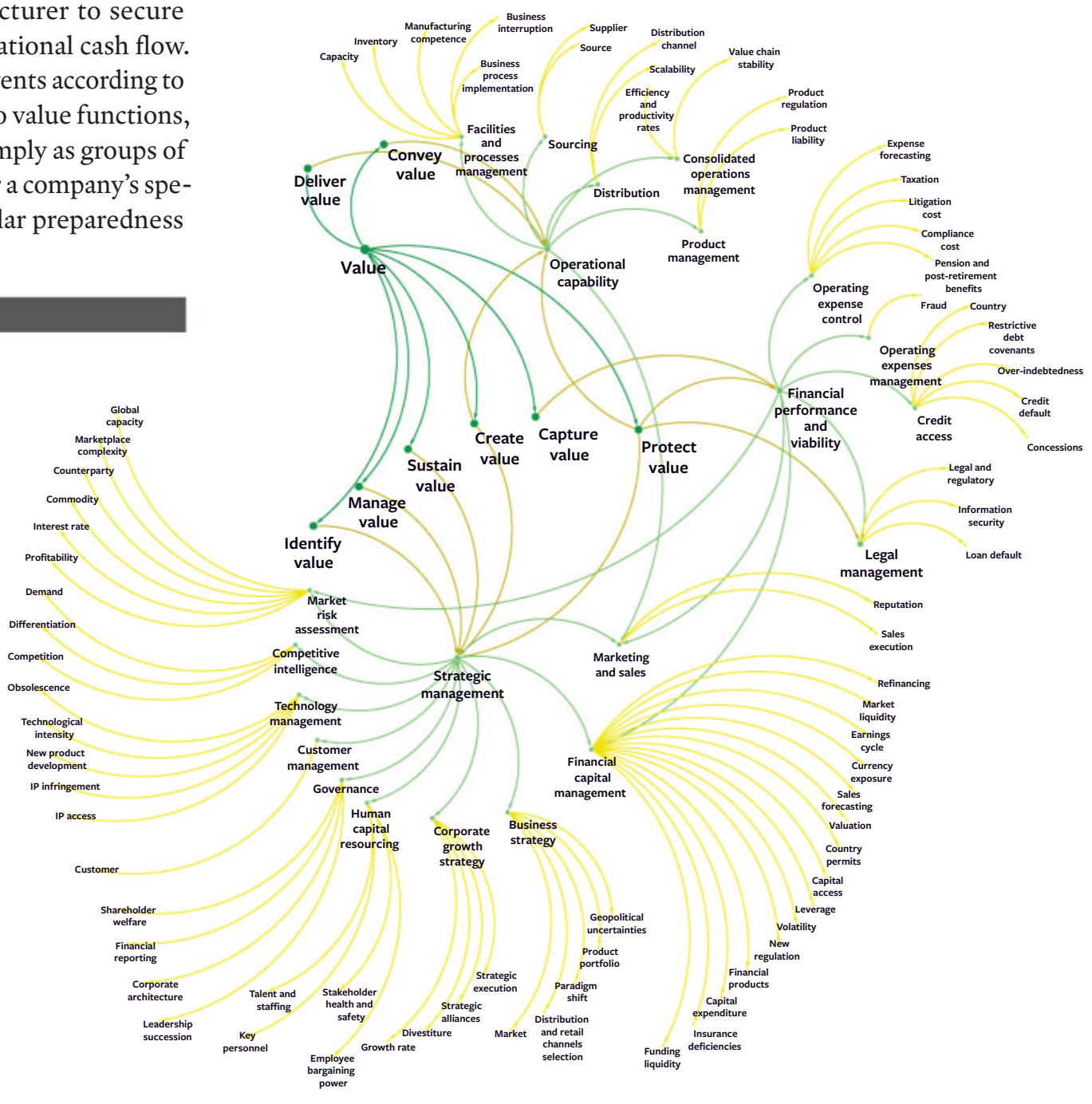
Compartmentalize and Reduce Uncertainty

Uncertainty about the consequences of a risk event is unavoidable, but it can be managed based on where the level of uncertainty falls on a spectrum between complete knowledge and complete ignorance (both of which are extreme and unlikely).[8] Leaders should then seek to convert risks with higher levels of impact uncertainty to lower levels. (See "Managing Levels of Impact Uncertainty," p. 30.)

Risk events causing level 1 uncertainty usually entail a very limited number of future scenarios with clear intrafirm effects, where causal linkages between risk events and the enterprise's value exchange system can be accurately known. Examples of such events include routine variation in production, expected sales losses, and human errors in performing manual tasks. When specific types of level 1 events occur frequently, they are indicative of errors in process or oversight that can be rectified permanently if diagnosed correctly. For instance,

A Value Function Risk Inventory

This risk inventory derived from 20 years of S&P 500 data shows how the functions of a company's value exchange system (green nodes) link to business functions and their respective risk categories.



cargo thefts — a recurrent problem at logjammed transport hubs — can be prevented using optical character recognition scanners that track container freight and maintain real-time records. Importantly, at level 1, the overall uncertainty of the impact on firm value is within an expected, acceptable range.

Risk events causing level 2 uncertainty involve a larger number of alternate future scenarios and have interfirm consequences; however, even though they are more challenging, the probability that they will occur and their effects can be estimated. Businesses' formal scenario planning exercises often involve level 2 events in which previously acquired knowledge regarding the impact of risk factors leads to improved accuracy and an effective exercise overall. The six-day Suez Canal blockage was predictable because a multiship pileup had closed the canal for two days in 2018. As a result, the Pentagon had already worked a longer blockage into its normal operational preparedness.[9]

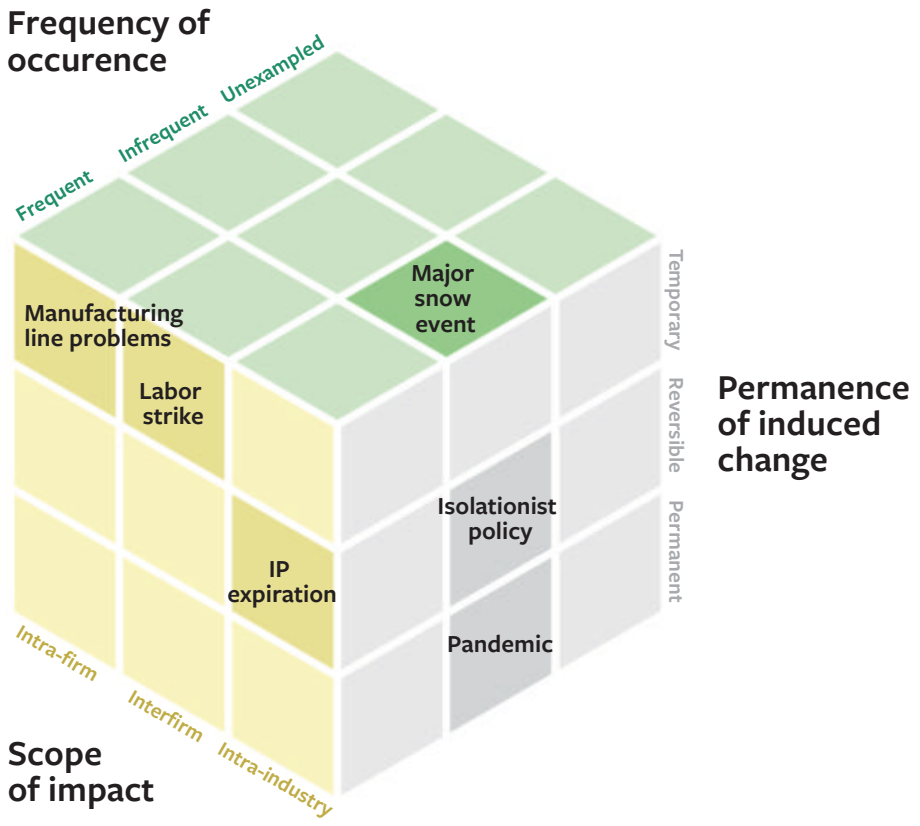
Risk events causing level 3 uncertainty involve a bounded set of scenarios where certain known risk events may affect the company in unknown ways. There is limited knowledge about how a chain reaction of consequences from a risk event might manifest at this level. Typically, these risks include less frequently occurring events with intra-industry scope and multistakeholder implications, which should be considered worst-case scenarios.

Port Revel, a training facility situated on a lake in the French Alps, reduces level 3 uncertainty by helping ocean shipping companies simulate worst cases and identify the previously unknown consequences of operating increasingly large container ships through shipping infrastructure largely designed for smaller vessels. It closely replicates conditions at the trickiest spots in maritime transport, allowing trainee pilots to navigate scaled giant container ships through strong gusts of wind across a mini-Suez, steer and dock cruise ships in a crowded mini-San Francisco Bay, and maneuver oil tankers through an imitation Port Arthur. These exercises draw out unanticipated ship performance and pilot behaviors, helping to identify and address previously unknown event consequences.

Level 4 uncertainty encompasses events with unknown risk factors that could have a variety of negative consequences, the repercussions of which can't be estimated. These unknown unknowns are usually expressed in 10-Ks through statements such as "Other unknown risks may impact our business operations and projected performance." It is challenging to develop scenario models in the presence of unknown unknowns. The models are incomplete representations of the world that could entail risks unimagined while developing them.

Characterizing Risks

Every risk can be characterized according to how widely its impact may be felt, how long the changes it causes may last, and how often it occurs. For example, a major snow event has intra-industry scope, induces temporary changes, and occurs infrequently.



Once leaders order the uncertainty of impact into levels, they can focus on converting higher-level impact uncertainty into lower levels by discovering unknowns through data, simulation modeling, and logical analyses. For instance, the three-year gap between the U.K.'s Brexit referendum in 2016 and its departure from the European Union in 2019 offered leaders an opportunity to convert the imagined event into likely scenarios and capture its vast trade implications. By focusing on the most vulnerable aspects of their value chains, such as those with the highest number of cross-border transactions, leaders could have recognized the imminent redistribution of goods passing through congested ports and modeled rerouting scenarios. For example, Felixstowe was known to be handling 48% of the U.K.'s container trade, which could have been sent instead to multiple smaller and less busy ports. Evidence of impending port congestion also could have implied the high likelihood of delays and the need to hold more inventory in the U.K. to guarantee on-time deliveries.

Managing Levels of Impact Uncertainty

Once managers have mapped risks to the appropriate level, they should take the critical action recommended to convert higher-order risks to lower-order risks.

	TYPICAL OPERATIONAL LEVELS OF IMPACT UNCERTAINTY			
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
CHARACTERISTICS	Known linkages and causal mechanisms, a clear future	Well-understood linkages, alternate futures with probabilities, and simple models for simple scenarios	Well-estimated linkages, multiple alternative futures and a few alternative models for different scenarios	Several plausible and some unknown futures, very few scenario models
CRITICAL ACTION	Manage known linkages, known impacts, and clear futures	Reduce level 2 uncertainty by planning and mitigation exercises	Convert level 3 to 2 by understanding variation of known risk impacts using knowledge and contextualizing it into possible futures for the enterprise	Convert level 4 to 3 by expanding knowledge of risk impact networks through sensing, discovery, and experiential knowledge of the enterprise

Where most enterprises *currently* focus

Where most enterprises *need to* focus

Systemwide changes that are likely to have permanent effects are typically caused by noticeable megatrends, such as technological breakthroughs, changes in consumer demand patterns, global events, or regulatory body interventions. Once these trends are on a company's radar, they can be tracked and rapidly interpreted (if the necessary observation and modeling capabilities are in place). For instance, the European Union's carbon border tax, which was enacted in December 2022 after years of debate, won't be fully implemented until 2026, offering companies several years to reduce the uncertainty arising from it.

Further, for potential events that may be infrequent yet high impact, businesses can examine other industries where the consequences of similar events might be better recognized; then they can interpret the implications for their own value exchange system. For example, Brexit strategists could have studied cross-border trade between the U.S. and Canada and the U.S. and Mexico in the automobile and white goods sectors to help them navigate looming free-trade agreements and border regulations.

The active identification of plausible risk events and their potential consequences are the kinds of actions that contribute to building true risk intelligence. However, our research indicates that companies place little emphasis on discovering unknown and plausible risk events and their outcomes and instead focus attention on managing known risks. We also find that companies do not have a similarly complete knowledge of risks, even when those risks are publicly disclosed by direct competitors. Our study of 10-Ks revealed significant variation in the acknowledgment of risk factors, even among companies in the same industry. For instance, there was a lag of as much as eight years in acknowledging cyber risks after the first public data breach within a group of 18 comparable companies in the financial sector. This pattern was consistent in four additional sectors — including retail, telecom, technology, and health care.

Moreover, our analyses revealed only marginal levels of acknowledgment of causal relationships between risk factors, which are how risks impact companies in the real world. It is only logical that a known or unknown risk factor, when manifested, would likely influence other linked known and unknown risk factors, thereby creating a cascade of consequences. This ultimately would affect a company in potentially known but unexpected (or, worse, misunderstood) ways.

While most companies think they are preparing for risk events, they tend to focus only on level 1 and 2 uncertainty and therefore develop highly specific but narrow mitigation plans. Take Maersk, for example, which in 2017 fell victim to a ransomware cyberattack that brought down its entire network for days and halted its operations at 76 port terminals globally at a cost of roughly $300 million.[10] Yet the shipping company did not

publicly acknowledge the risk of a cyberattack until its 2013 annual report, despite the risk of hacking and other cyberthreats having been well known since the late 1990s (although perhaps not seriously regarded as a primary risk for shippers). Thus, few risks are entirely unknown, and industry-specific unknowns may not be unknowns in other sectors.

Construct and Contextualize an Enterprise Risk Network

To gain clearer insight into level 3 and 4 uncertainty, it is important to understand the linkages among enterprise risks. Developing quantified risk networks (QRNs) can help. A QRN is a weighted map that links all identified potential risks to a company's value exchange system functions and helps decision makers interpret related impacts. Moreover, QRNs can reveal counterintuitive insights, such as a function's indirect exposure to risks typically associated with a different but connected function. For example, the risk of inaccurately forecasting shipping demand in a freight company directly affects its operating expense management function and indirectly affects facility capacity, operational capability, and customer concessions, as well as the company's reputation.

Companies should build their own risk networks for three reasons. First, each company has its own unique value exchange system that is best understood by its leaders. Second, resilient companies need to build in redundancies, which is challenging to do in resource-constrained environments. Custom QRNs highlight the most connected — and most vulnerable — value functions, creating an order of priority for allocating resources to bolster the enterprise. Third, custom QRNs provide a shared picture of risk for company leaders, who may or may not agree on critical vulnerabilities. The QRN-building activity focuses managerial attention on the often disregarded but potentially crucial functions and related risk categories to ultimately help leaders anticipate and prepare for the future.

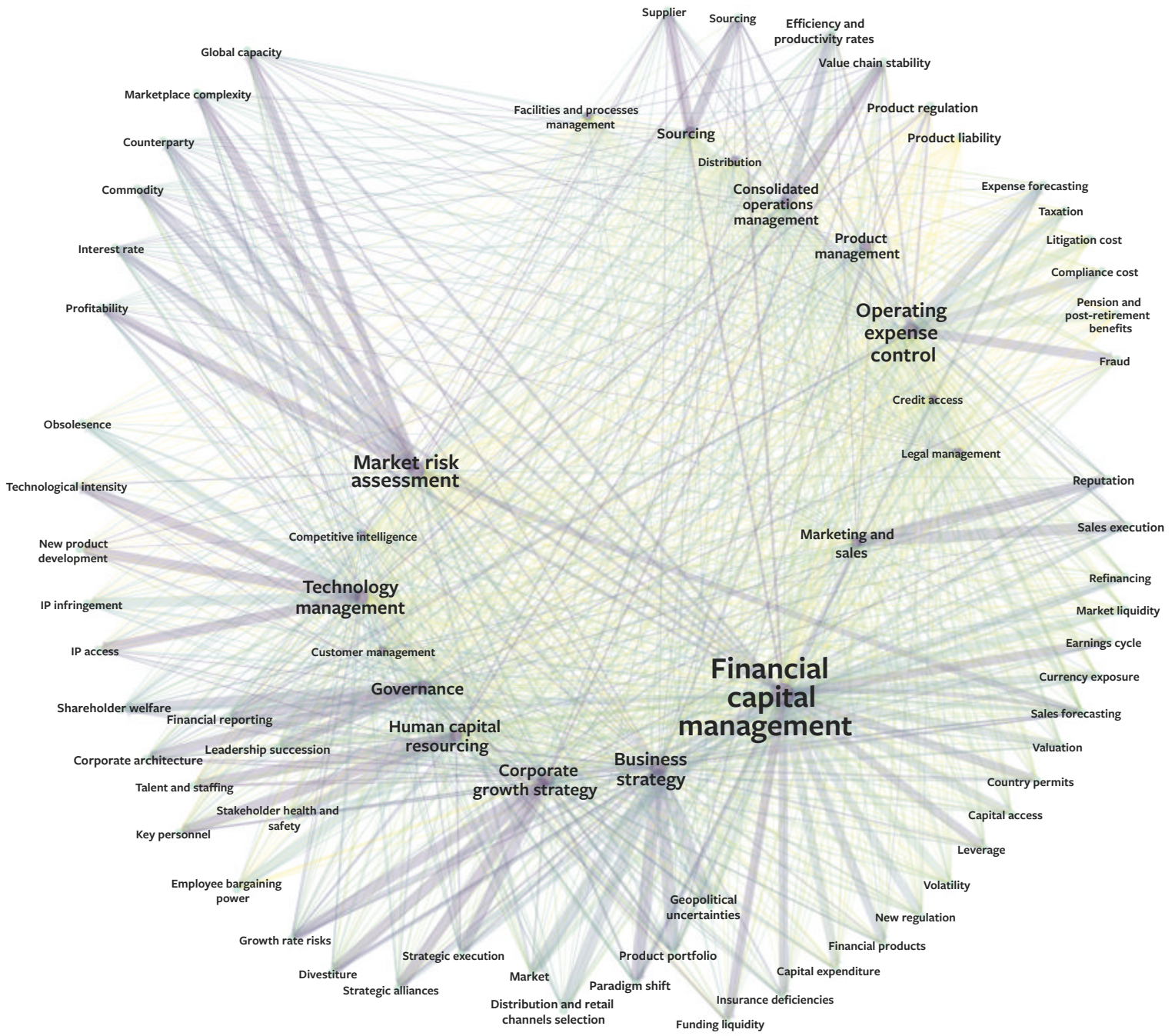
To begin constructing your company's risk network, identify the risk events that are particularly relevant to your business by working from critical value functions upon which it relies and from the risk categories captured in the inventory. Identify plausible risk events in each category from data sources such as company memos, public risk disclosures, investment analyst reports, and historical knowledge. For example, leaders managing the operations function can use inventory risk categories, such as facilities and process management, sourcing, and distribution, to build a list of plausible risk factors or events (such as an unexpected storm, an equipment malfunction, input shortages, drained emergency supplies, worker health emergencies, communications interruptions, or labor strikes) that could affect business continuity. Note that these lists will likely contain several risk factors under each risk category.

Next, characterize relevant risks using the SPF framework, identify plausible scenarios related to the company's value functions, and identify potential responses. This exercise gives managers the opportunity to pay extra attention to less appreciated risks and helps them reduce the overall level of uncertainty of the impact of risks on the company's value exchange system.

Since the archetypal company is organized by function, the consequences of potential risks on individual functions (such as a labor strike's effect on sourcing) and the interconnectivity between different value functions themselves should be estimated for each functional node in the QRN. For instance, once managers define the level of interconnectivity between the sourcing and operations functions in their company, they can deduce the direct consequences of a labor strike for sourcing and its indirect consequences for operations. Weighting impacts, even using relative terms such as high, medium, and low, provides a common language for managers to discuss significant risks and plausible scenarios and can help resolve debate on what is likely or what is important. Functions identified as particularly important or vulnerable should be analyzed by experts to develop a deeper understanding of the risks affecting them and their interconnectivity.

We created a generalized QRN, beginning by asking leaders with sector and functional expertise to indicate interconnectivity between their function and other business functions on a 10-point scale. (See "A Quantitative Risk Network," p. 32.) Then we asked the leaders to indicate the potential impact of specific risks to their functional area arising from these connections. For example, a sales and marketing expert who indicated significant interconnectivity with the business strategy function was asked whether sales forecasting risks, sales execution risks, and reputation risks would have a high, medium, or low impact on business strategy. Companies

To gain clearer insight into level 3 and 4 uncertainty, it's important that leaders understand the linkages among enterprise risks.



A Quantitative Risk Network

This visual representation of a generalized QRN reveals the linkages between risk categories and enterprise functions. It illustrates how companies can isolate and identify key value functions that link several connected risks and are therefore particularly significant in building enterprise resilience. The more central the function, the larger its font size; the thick links in the QRN imply high-impact relationships between functions and risk categories.

can follow this process to build a codified understanding by leveraging their internal leaders as well as external experts. Once coded, the data forms the basis for a network representation of risks and a company-specific QRN.

Such a QRN helps leaders better understand a company's vulnerability to risk events by illuminating those functions that are central to the value exchange system. A risk event affecting a central function would imply a strong cascade of negative effects across the company's value exchange system. For example, financial capital management connects directly to 15 financial risk categories and indirectly to 30 risk categories from other functions. Any event occurring in any one of the risk categories affecting financial capital management will have implications for all other connected functions; for instance, significant currency exposure will likely affect the company's sourcing decisions. Thus, protecting the financial capital management function is critical to resilience. In contrast, a negative effect on the marketing and

sales function is unlikely to cause a cascading impact in this company.[11]

Expert knowledge, industry insights, experience, and the simulations are all useful in building a network view of enterprise risks. QRNs are baseline resources that help a company isolate and objectively model for worst-case scenarios, estimate cause-effect patterns, and effectively reduce level 3 and 4 uncertainty.

A company with a well-honed QRN will be able to differentiate between the scope and consequences of a business interruption due to, say, a pandemic and a transport route blockage. It will also be able to pinpoint the parts of the business that will likely experience significant consequences from these events, such as value delivery, value creation, and value protection, and identify the precise business functions that should be guarded for each of these events. In the case of the pandemic, these functions would include financial capital management, market risk assessment, and technology management; for the lower-scope blockage, these would include operations management and operating expense control. Furthermore, the company could use the value function risk inventory and build scenario models for risk events identified within each of these functions.

Ultimately, pairing the knowledge of plausible risk events and their likely interactions with the company's value functions enables strategists to develop tailored mitigation plans and response strategies. Leaders who recognize the need to better understand a specific set of scenarios can invest in developing precise models to reduce the uncertainty of their impact on the company.

THE VALUE EXCHANGE SYSTEM THAT DRIVES any large, complex enterprise is continuously challenged as contexts vary in the dynamic business environment. This raises the stakes for anticipating change, exploring new variations of business models, and continuously pursuing the next wave of growth-enabling capabilities. Risk intelligence helps leaders in this work, enabling them to better focus on maintaining continuous value exchange and fostering the adaptability needed to achieve resilience.

To create and nurture risk intelligence, a company needs a central risk management function that is staffed with broad functional expertise and given the resources required to identify and categorize risks. It needs to embrace a mindset of risk uncertainty versus risk avoidance and reduce the levels of uncertainty. It needs a company-specific quantified risk network that is updated in a dynamic manner. And finally, it needs a culture of risk intelligence in which leaders across the organization share a common framework and language for interpreting risks and guiding resource allocation for risk mitigation efforts. Ultimately, honing a risk intelligence capability represents the key to building a resilient enterprise. ■

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How Professional Services Firms Dodged Disruption

Adopting a dual mindset of paranoia and pragmatism can keep incumbents nimble amid changing market dynamics.

By Julian Birkinshaw and David Lancefield

PROFESSIONAL SERVICES FIRMS HAVE been threatened with disruption for a long time. In 2015, Richard and Daniel Susskind foresaw that technology would cause a "steady decline in the need for traditional flesh-and-blood professionals," while more recently, CB Insights said that "a tectonic disruption is hitting management consulting."[1] Even earlier, Clayton Christensen and colleagues warned, "Although we cannot forecast the exact progress of disruption in the consulting industry, we can say with utter confidence that whatever its pace, some incumbents will be caught by surprise."[2]

But things have not played out as predicted. In consulting and law, the established firms are as influential and profitable as ever.[3] Many potential disrupters have come along. Some have failed, some have gained strong niche positions, but none has challenged — let alone toppled — the existing order. Most established leaders have used a wide range of strategies and tactics to adapt quickly to the threats.

As is the case in many well-established industries, professional services markets are dominated by a small, clearly identifiable group at the top and large numbers of lower-tier firms operating in their shadow. Consulting's giants include McKinsey, Boston Consulting Group, and Bain; technology-based firms Accenture and Capgemini; and the Big Four accounting firms Ernst & Young, Deloitte, KPMG, and PwC. In law, the top tier includes the five London-based firms informally known as the Magic Circle — Linklaters, Clifford Chance, Freshfields, Allen & Overy, and Slaughter and May — along with Kirkland & Ellis, Latham & Watkins, and DLA Piper.

How have these firms been so resilient? Our research, which included interviews with 25 executives and a review of case studies on a dozen would-be disrupters, revealed many factors at work. The one that distinguishes the most effective firms is their capacity to diagnose potential causes of disruption and respond accordingly.

Simon Prades

We define *industry disruption* as an upending of the established order, with incumbents losing out to new competitors. As Joshua Gans has argued, disruption can occur when incumbent firms have blind spots about what customers want (a demand-side effect) or when a new technology makes the incumbents' existing capabilities obsolete (a supply-side effect) — or a combination of the two.[4] (See "Four Types of Potential Threat in Consulting and Law," p. 37.)

Because each scenario requires its own response, understanding the dynamics of supply- and demand-side effects can enable executives in any sector to more readily identify potential disrupters and keep them at bay.[5]

Demand- and Supply-Side Threats

Based on our research, we identified artificial intelligence technology as the biggest supply-side risk, threatening to take over work that professionals have traditionally seen as their own. On the demand side, the threat comes from clients seeking greater control over how they buy and use professional services. Still other would-be disrupters challenge incumbents from both the supply and demand sides at the same time. Meanwhile, new boutique and specialist firms have cropped up to serve particular client needs in lucrative business segments, though they have rarely been truly disruptive. Below, we look at each potential threat in detail.

AI undermines the business model. The launch of generative AI in November 2022 has accelerated the ongoing transformation of many aspects of professional services work, enabling greater accuracy and significant cost savings.

At law firms, AI tools scan legal documents and review contracts. AI-based services companies such as Kira Systems, Clio, Reveal-Brainspace, iManage, and Thomson Reuters provide assistance in discovery, due diligence, and contract management and review. Thomson Reuters's services are used by 97% of the largest law firms.

These companies don't position themselves as competitors to law firms, but as they scale and the technology gains capabilities, they can begin to undermine those firms' business models. Clio's legal software, for example, can conduct e-discovery for a claim and even engage in litigation analysis by scanning precedent-setting cases, potentially reducing the number of billable hours that a firm can charge to clients.

In consulting, AI can help professional services firms provide additional value by uncovering new relationships, identifying patterns of customer behavior, and highlighting cost-saving opportunities. "It's no longer good enough to show up with a team that knows more about this industry than anybody else," one Big Four consulting partner said. "You also need a data set or an algorithm that provides additional sources of value."

But AI can also be a powerful disrupter. Palantir Technologies started out using AI to detect fraud and has since expanded to applying state-of-the-art machine learning to solve problems for a variety of government and private clients. Its work in support of government surveillance has drawn controversy, but its predictive analytics helped a large automotive supplier make large efficiency gains in its engineering and manufacturing functions. Such results represent a significant advance in the rigor and quality of insights consulting firms can offer.

Established firms have taken on the threat by building up their own AI capabilities through acquisitions and in-house development. McKinsey has acquired 12 mostly small AI firms since 2013, including U.K.-based QuantumBlack, which uses advanced data analytics to improve organizational performance.[6] In law, San Francisco-based DLA Piper has developed Aiscension, an AI product that monitors compliance risks. The insurance law firm Kennedys created its Kennedys IQ spinoff, which uses AI to assess medical evidence and recommend amounts for damages.

These acquisitions and partnerships deliver more than new capabilities; they can expand the range of issues their firms can handle for clients.

Incumbents are also enhancing their role as high-touch trusted advisers, which AI cannot replicate. Several large consulting firms have increased their range of offerings by investing in experience centers — physical and virtual environments where clients and consultants use design thinking and other creative techniques to envision possible futures. Over the past five years, IBM, Deloitte, Accenture, and other firms have bought more than 200 creative agencies to help develop these centers.

Clients take control: unbundling the service. The most profound demand-side threat is unbundling, as increasingly savvy clients look for ways to cut costs and exert greater influence over their relationships with services firms. This can mean reclaiming activities previously handled by outside firms or turning to specialists instead of the broad offering of a large professional firm. Both options can help clients build up their internal capabilities and gain greater accountability for business outcomes. But unbundling threatens the incumbent firms' leverage model by taking away work that would typically be assigned to a lot of their junior — and lower-paid — generalists.

In law, the emergence of alternative legal service providers (ALSPs) is a testament to this demand-side threat. ALSPs aren't law firms as such, but they provide

a vast array of legal services, such as document review or contract management, at a lower cost. In 2017, DXC Technology, a Virginia-based IT services firm, outsourced almost its entire legal function to UnitedLex, an ALSP based in Overland Park, Kansas. DXC transferred 150 in-house lawyers to UnitedLex, retaining only a small number of senior professionals. While outsourcing in-house legal departments is not uncommon, law firms saw this as a huge threat because it was the biggest transaction of its kind at the time and because it involved an ALSP, which can offer a much lower cost structure.

Consulting faces a similar challenge from the rise of consulting networks, such as London-based Eden McCallum, and from online platforms, such as New York-based Gerson Lehrman Group. These companies match clients with consultants on a project-by-project basis, bypassing the large firms. London-based Kubrick Group contracts with companies to provide teams of data scientists and technologists, who can later be hired by the client.

Such arrangements put the onus on the client to define its problems and integrate work teams — something traditionally handled by a large consulting firm. But they eliminate the need to hire a large firm except on the biggest and most complex projects. And without the incumbents' higher overhead, fees are much lower.

Clients are also changing commercial arrangements, increasingly demanding outcome-based deals that require consultants to demonstrate that they were directly responsible for the desired results, such as a 5% reduction in costs. Because this can be harder to do with projects that involve factors outside the consultants' influence, like growing revenue, most firms agree to outcome-based deals only when they can be confident of contributing to the desired result.

Incumbent firms are responding to these demand-side challenges in a couple of ways. Law firms have formed their own ALSPs; London-based Allen & Overy created Peerpoint in 2013, a separate operation with 350 largely freelance lawyers and 53 million pounds ($64 million) in revenue. In consulting, Deloitte created a unit called Pixel that breaks down client problems into their constituent parts and then uses a crowdsourcing platform to find the right experts to work on each part.

The large firms are also doubling down on their traditional strengths: tackling clients' biggest and most challenging problems. Their value comes from their ability to provide advice and compliance in high-impact, large-scale, high-risk situations, and they can charge a premium for the service. "We do open heart surgery rather than provide [general practitioner] services," said one senior lawyer.

Boutiques and specialists find strength in market focus. New competitors emerge all the time in professional services, as former top partners set up their own boutiques or venture firms back new startups. The successful ones take market share in specific niches but rarely cause much concern to top-tier firms. They cause limited disruption on either the demand or supply side, and they simply reflect the heterogeneity and complexity of the market.

In consulting, London-based Baringa has grown quickly by focusing on the energy industry, identifying such hot topics as renewable energy and hiring specialists who use scenario modeling to project future energy prices. New York-based AlixPartners focuses on turnarounds, litigation support, and transformation. Both firms have more than 1,000 employees. The legal industry has seen the rapid growth of specialists such as Caldwell Intellectual Property Law in the U.S. and Mishcon de Reya, a specialist in disputes, in the U.K. and Singapore. The success of such firms shows how deep expertise can create a defensible niche against broad-based competitors.

Large firms don't view these smaller businesses as a direct threat and often ignore them altogether. "They're not on our radar for the work we do with the C-suite," said a partner in a large London law firm. Still, they can help incumbents stay vigilant.

For one, they provide a window on a changing marketplace, often prodding established firms to move into business areas they might have otherwise neglected. Deloitte, for example, launched its digital business in response to the emergence of specialized boutique firms. Bain created and spun off The Bridgespan Group in order to focus on nonprofits.

The specialty firms can also expose weaknesses in top-tier firms' ways of working that need attention. For example, Altman Solon, the largest global strategy consulting firm specializing in telecommunications, media, and technology, commands C-suite attention in large part because the entire firm comprises specialists with deep expertise in those sectors, unlike many large firms that fill junior ranks with a lot of smart generalists. As

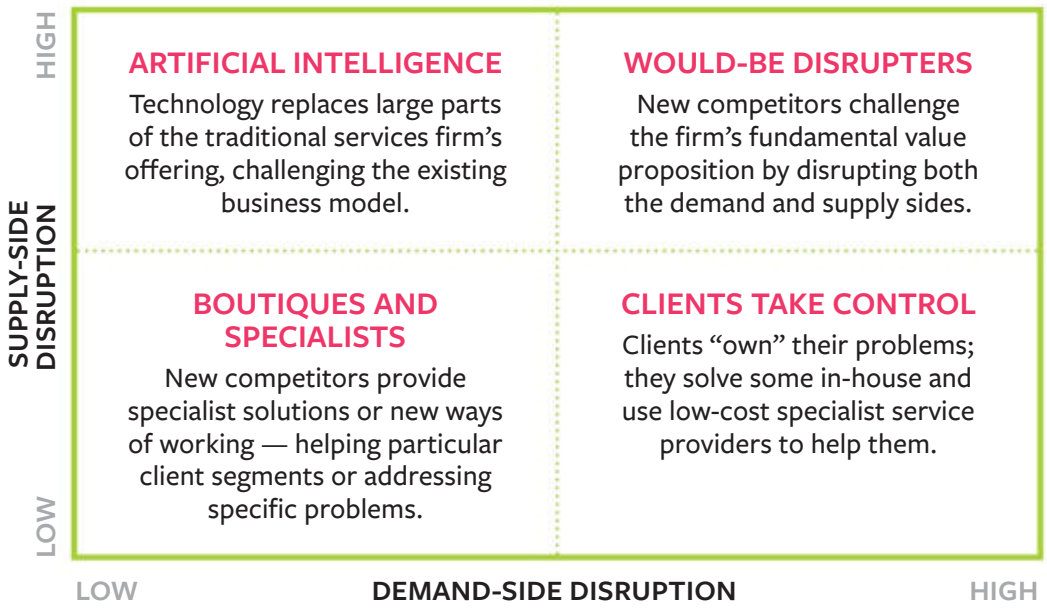
THE RESEARCH

- The authors conducted in-depth interviews with more than 25 senior professionals in consultancies and law firms.
- They also reviewed case studies of a dozen would-be disrupters and carried out an extensive review of the literature.

Four Types of Potential Threat in Consulting and Law

Professional services firms face threats on both the demand and supply sides.

Supply-side disruption increases as the capabilities delivered by the incumbent decrease in value to the customer. Demand-side disruption grows along with increased changes in customer behavior.


ARTIFICIAL INTELLIGENCE
Technology replaces large parts of the traditional services firm's offering, challenging the existing business model.
WOULD-BE DISRUPTERS
New competitors challenge the firm's fundamental value proposition by disrupting both the demand and supply sides.
BOUTIQUES AND SPECIALISTS
New competitors provide specialist solutions or new ways of working — helping particular client segments or addressing specific problems.
CLIENTS TAKE CONTROL
Clients "own" their problems; they solve some in-house and use low-cost specialist service providers to help them.
HIGH
LOW
SUPPLY-SIDE DISRUPTION
LOW
DEMAND-SIDE DISRUPTION
HIGH

a result, it is already up to speed with the industries in which it operates and thus is better able to develop client-specific strategies quickly.

Would-be disrupters that pose supply- and demand-side risk. The nightmare scenario for incumbents is disruption that affects the supply and demand sides at the same time. This is ultimately what killed Kodak and Polaroid: Digital technology changed how images were created and how they were consumed, leaving the incumbents nothing valuable to fall back on. The survivors from the photography industry, such as Fuji and Canon, did so by moving into adjacent markets, not by staying and fighting.

Such challengers have appeared in professional services, but so far they have fallen short as disrupters. For example, HourlyNerd, founded in 2013, had big ambitions to become a marketplace for connecting technology clients with freelance consultants, giving the client a wider choice of consultants at a faster rate than the typical procurement process. "We like to think of ourselves as a replacement to potentially hiring a consulting firm," one of the cofounders said.[7]

Axiom Law, founded in 2000, sought to provide on-demand legal talent using a network of employees and associates to provide legal services more efficiently. "Axiom has an opportunity to disrupt an industry that hasn't materially changed in a century," one investor said.[8]

Both firms have done moderately well. HourlyNerd, which rebranded as Catalant in 2016, shifted to a software-as-a-service model and today has several hundred employees. Axiom is a midsize law firm with about 1,600 employees, $842.5 million in revenue, and a more flexible business model than most of its competitors.[9] But neither has achieved the disruptive effects it aspired to.

Disruptive Threats on the Horizon

So, what looming disruptions keep the executives running consulting and law firms awake at night?

One factor the senior professionals we interviewed pointed to is a dramatic acceleration in AI and analytics capabilities. In law, codification — the process of capturing the legal reasoning of an experienced partner and turning that into an algorithm that can then be applied to future cases — threatens to eliminate much of the cognitive work now done by professionals. "That would be disruptive," said a partner in a large London firm.

Several others indicated that the biggest threat in the near future will most likely come from the giant technology companies: Google, Amazon, Microsoft, and Salesforce, in particular. Each has built client-facing capabilities, some from the large consulting firms, to enhance their strength in selling solutions to clients' technology challenges.

With their AI capabilities and global reach, they could affect both the supply and demand sides of professional firms' businesses. For example, using the vast amount of data at its disposal, Amazon Web Services could exploit its unique insights into customer behavior to provide retail clients with forecasts of online shopping trends.

"The greatest impact of Amazon Web Services won't lie in its position as a supplier of cloud services, but in the extraordinary scale and depth of its information on consumer buying behavior, which no conventional consulting firm could begin to compete with," said a partner in a large consulting firm.

Others downplayed the threat. "The likes of Google are not actually that good at client service," one interviewee said. While it is possible that a tech company could buy a large consulting firm, that would represent a significant strategic pivot from the typical approach of developing partnerships with consulting firms and would reduce the number of firms it could partner with in the future.

Staying Nimble

The big professional services firms haven't avoided disruption simply because of the actions they've taken.

Diagnosing the Nature of the Disruptive Threat

Consider an emerging technology or new competitor in your industry and answer the following questions. Each question should be answered on a scale from 1 to 5, with 1 indicating "to a very limited extent" and 5 "to a very great extent." Average your scores for each side and place them in the corresponding quadrant of the matrix.

Supply Side

1. To what extent is this new technology able to match what incumbents are already doing, in terms of quality and efficiency?

2. To what extent does this new technology/competitor make existing capabilities in manufacturing the product or coming up with solutions obsolete?

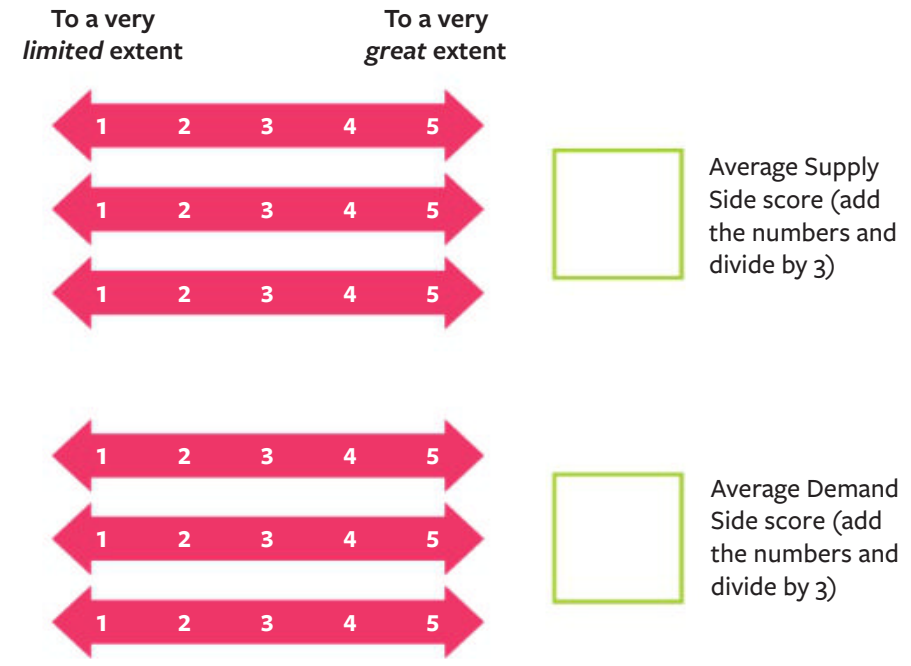
3. To what extent are you struggling to access the people and competencies to compete with this new technology/competitor?

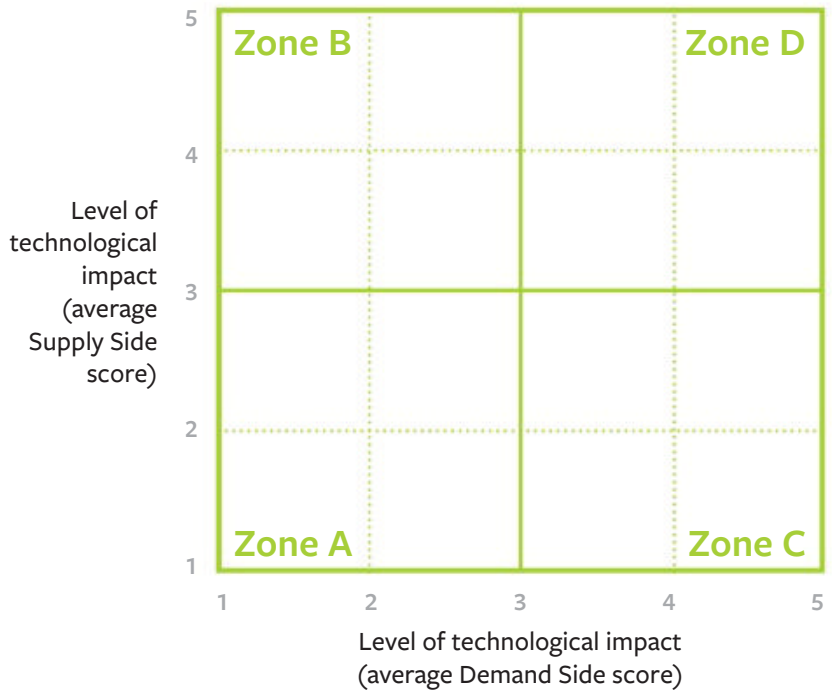
Demand Side

1. To what extent are clients or end users changing their behavior as a function of this new technology/competitor?

2. To what extent does this new technology/competitor make existing capabilities in distribution, sales, and marketing obsolete?

3. To what extent is the new technology/competitor able to generate a first-mover advantage that you would struggle to catch up with?


To a very *limited* extent
To a very *great* extent
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
Average Supply Side score (add the numbers and divide by 3)
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
Average Demand Side score (add the numbers and divide by 3)



Based on where you've positioned the emerging technology on the chart, you should consider taking the following actions:

Zone A: Minimal disruption. Keep monitoring the technology, and be alert to possible changes.

Zone B: Supply-side disruption. Build or buy the missing competencies. Partner with new entrants. Invest cautiously; time is on your side. Not a crisis situation.

Zone C: Demand-side disruption. Work with customers and distributors to understand new user behavior. Maintain links to existing channels, and double down on your brand. Not a crisis situation.

Zone D: Full-on disruption. Urgent steps are required. For example, look for an acquisition or set up a separate business unit to embrace this new threat/opportunity.

More important is their vigilance and responsiveness to changes in their business environment. While consulting and law firm executives often disparage their seemingly old-fashioned ways of working, their professional partnership models have proved to be remarkably resilient.

From our interviews, we identified three elements of success that are worth highlighting as potentially applicable to other sectors as well.

Innovation efforts are devoted to solving client problems. This contrasts with many other businesses, where innovation activities are pursued separately from the customer-facing parts of the organization. The best professional services firms pursue product and service innovations based on common limitations, frictions, and opportunities they've identified in their clients' businesses. They then develop, test, and refine those innovations with selected clients and partner organizations — such as technology providers — before launching them across their client portfolios.

Partners and their juniors work closely together with clients. The firms' apprenticeship model means that the sense-response gap — the difference between

sensing client needs and then taking appropriate action to address them — is narrower than in firms where the leaders are a long way removed from those doing the work.

Firms take a cautious approach to investing in new activities. While this might seem to be a weakness in a fast-changing world, the truth is that most emerging technologies take a long time to realize their potential, and plenty of firms have failed by moving too quickly. Because of the project-based nature of their work, professional firms are able to test new technologies, see what works, and then move forward based on project success and client demand.

Staying Ahead of Disruption

The experience of professional services firms in holding off potential disruption suggests four actions that firms in other sectors can take to prepare for and respond to change.

Diagnose the threat. While every new competitor or technology can be seen as a potential threat, it's necessary to assess the magnitude of the risk and the part of the business that it might affect. The consulting and law firms we studied were mostly very thoughtful about separating out the demand- and supply-side effects. (See "Diagnosing the Nature of the Disruptive Threat" for how to apply this logic.)

Match the response to the challenge. Once the supply and demand effects have been mapped, it's possible to target the appropriate response. Demand-side challenges require experimentation in how clients' needs can be anticipated, understood, met, and adjusted to. Professional services firms are inherently good at this. Project teams are empowered to come up with creative solutions and to experiment with alternative models for forming partnerships and delivering services. This should serve as a cautionary note to firms that have become too "corporate," with decisions flowing from the top down to partners and teams.

Supply-side changes, in contrast, require investment in new capabilities and an openness to restructuring and even outsourcing internal activities. This often requires a higher level of centralization, frequently with a dedicated team that hires from the outside or makes small acquisitions. The challenge is to integrate them with client project teams so they are deployed in the market.

Stay focused on the organization's true mission. While there are plenty of genuine threats out there, there's also a lot of noise. Paying too much attention to all of the changes swirling around can cause leaders to lose sight of the bigger picture. For professional services firms, the client relationship transcends all else, and the appropriate response to both demand- and supply-driven threats is to double down on that relationship. "We want to retain the overall relationship, focusing on the areas of premium work," the partner in a large London law firm said. "The debate is how much we leave ... to other law firms and how much we retain and do via third parties or alternative delivery models."

Balance pragmatism with a healthy paranoia. The law and consulting partners we spoke with in our interviews were genuinely torn. On the one hand, they saw little or no evidence that their strong positions were under threat, and they agreed that the dire predictions of disruption from a decade ago had been unfounded. On the other hand, they did not want to appear complacent, and they certainly didn't want to send a message to their junior colleagues that there were no future risks of disruption. Executives must learn to live with a dual mindset: a pragmatic acknowledgement that the fundamentals are sound, coupled with a paranoid suspicion of emerging technologies or new competitors. After all, it was those incumbents that might be caught by surprise that Christensen and his colleagues considered most at risk of disruption. ■

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The Missing Discipline Behind Failure to Scale

Companies make significant investments in developing and incubating new business initiatives, but too few follow a rigorous path to scaling their ventures.

By Andy Binns and Christine Griffin

IN 2018, BEST BUY ANNOUNCED that it would enter the health market. It was an unexpected move for a consumer electronics retailer, but it was consistent with then-CEO Hubert Joly's passionate advocacy for making Best Buy a company with a deep sense of purpose.[1] Starting with a focus on helping the elderly to age safely at home, the company broadened the strategy to make Best Buy Health a provider that "enables care at home for everyone."[2] It was also a lucrative opportunity: Home health is forecast to be a $265 billion market by 2025.[3]

Over the next few years, Best Buy Health tested its key assumptions about the opportunity, seeking out the sweet spot that would allow it to build a new business to sit alongside the company's existing retail franchise. By 2022, it was a $525 million business, projected to grow at a 35% to 45% compound annual growth rate through 2027. The initiative created a new growth vector for its parent company and gave it a measure of resilience in the turbulent consumer retail sector.

Best Buy succeeded where many companies fail. It moved through the three innovation disciplines

Dan Page / theispot.com

required to build new businesses: ideation, incubation, and scaling. It came up with a new idea for solving the customer problem of aging safely at home, incubated it by running in-market experiments to test value propositions, and then scaled it to a revenue-generating business unit. This is a relatively rare accomplishment. Our research finds that while 80% of companies claim to ideate and incubate new ventures, only 16% of companies successfully scale them.[4]

A key contributor to this problem is the almost exclusive focus that companies place on the first two innovation disciplines. The ways and means of ideation and incubation — embodied in methodologies such as design thinking and lean startup, and disseminated by an army of trainers and consultants — are well known and readily available. However, when it comes to scaling, there are few methodologies to guide corporate decision-making.

Scaling is the missing innovation discipline. Indeed, when we assessed the innovation frameworks used by 15 large corporate incubation units, we found that only four mentioned scaling. For example, one large IT company's incubation unit has a highly evolved process for ideation, validation, and incubation, but its framework stops at scaling.[5] Scaling is considered outside the remit of such units: It becomes the kind of blind spot that author Douglas Adams characterized as "somebody else's problem."[6] This leaves a critical gap in the ability of companies to build new businesses. After all, ideation and incubation generate value only when scaling succeeds.

To learn how to bridge this gap, we studied Best Buy and 30 other successful and unsuccessful corporate ventures. We found that most of the successful companies followed a similar approach to scaling new ventures that we call a *scaling path*. It requires a clarity of ambition; an understanding of the assets needed to access the customers, capabilities, and capacity required by the new business; and a willingness to use a variety of techniques to assemble those assets into a coherent strategy for attaining scale.[7] Best Buy, for example, leveraged its existing assets — its stores, customers, and Geek Squad technical assistance team — and combined them with a $2.2 billion investment in acquisitions to scale its health business.

In this article, we offer five key lessons for building a scaling path that are drawn from both successful and unsuccessful corporate ventures.

1 Set an Ambition Equal to the Scale of Opportunity.

One of the marked differences between successful and unsuccessful corporate ventures is the scale of their ambition. In this regard, successful ventures are more like the best entrepreneurial startups, which adopt bold, long-term aspirations. As Stanford's Amy Wilkinson found in her research on successful entrepreneurs, they "drive for the daylight," making an imaginative leap to see what is possible and then working on what it will take to get there.[8] Unsuccessful corporate ventures, on the other hand, are often defined by the strictures of the annual budget process; they ask, "What can we achieve within the plan horizon?" Starting a scaling path with a bold ambition helps to ensure that the venture scales to the size of the opportunity, not to the level of risk tolerance within the corporate culture.[9]

A bold ambition crystallizes the market opportunity that the new venture seeks to exploit. In the late 1990s, online legal information service LexisNexis had a small business serving mobile phone operators who needed to check the creditworthiness of new customers. Then, as new software that could link disparate data sets began to emerge, the company's leaders realized that there was an opportunity to pioneer an entirely new market by enabling insurance, financial services, and other companies to use publicly available data to assess the risk of doing business with individual consumers. This ambition provided the foundation for creating a big data and analytics business that now has more than $2 billion in revenues.

2 Work Backward From the Ambition to Identify a Potential Path to Scale.

Once their ambition is clear, the leaders of successful corporate ventures hypothesize what it will take to deliver on it. They create a vision of a desirable end state and work backward to describe the specific actions they might take to achieve this vision. This is

THE RESEARCH

- The authors led a research project to understand why some companies successfully scale new corporate ventures while most struggle and fail.
- They analyzed the ventures of 31 large, global corporations; interviewed executives at each company; and gathered data via a quantitative survey answered by 150 executives.

not a strategic plan in the traditional sense, as uncertainty remains too high for a new venture to commit to a definitive plan. More accurately, the path is a set of plausible strategic options for what assets will be needed to achieve the ambition.

At Best Buy Health, president Deborah DiSanzo worked backward from the company's ambition to enable care at home for everyone. She focused on three areas for Best Buy, assembling "the Lego pieces of what it takes to start building a scalable business": (1) wellness at home, with health and wellness products sold in stores and online; (2) aging at home, providing solutions for aging seniors, including mobile phones, medical alert devices, and its Caring Centers staffed by real people; and (3) care at home, offering quality care services in the home, including Current Health, an enterprise platform that strengthens the link between patients and their providers, Clinical Command Centers that provide first line of defense triage when medical concerns arise, and Geek Squad, which delivers technology to homes, sets it up, and teaches consumers how to use it.[10]

Typically, there are three kinds of assets needed to scale a new business venture: customers, capabilities, and capacity.

Customers: A new business unit needs a customer base, sales channels, and sales teams to attain market reach and generate revenue. Decisions about go-to-market assets and their configurations are based on data developed during the incubation phase, which should have validated that the new venture is addressing a problem that customers are willing to pay to solve and that the solution is preferable to available alternatives. In addition, the organization will need to learn how customers want to buy and what will influence their decision to buy.

Best Buy Health's home health monitoring services seemed to offer desirable benefits to patients, care providers, and payers. Patients were eager to leave hospitals and other care facilities as quickly as possible. Health payers and providers were keen to free up bed space and reduce the risk of hospital-acquired infections.

However, there were challenges, too. Past experiences had left providers and payers nervous about the idea of retailers entering the health care market. Patients had to let equipment installers enter their homes, and they had to learn how to use the new devices while experiencing the stress of having just been discharged from the hospital. Best Buy needed customer assets that would help it overcome these adoption challenges.

Adding capacity too slowly can choke off growth in the drive to scale; moving too quickly risks overinvesting ahead of market demand.

Capabilities: New ventures often arise from a new technology or product capability. The ability to wield these capabilities in a limited manner is core to both the initial conception of the venture and to running the experiments used to validate the business model in the incubation phase, but it is rarely sufficient to scale the venture. To successfully scale a venture, the leadership team needs to ask itself what capabilities are needed to deliver its offering's full value.

The answer to this question could be an existing niche capability that needs to be extended across the organization, or it could be an as-yet missing capability that is needed to execute the business model at scale. For instance, although LexisNexis was already aggregating public records data for sale to its existing legal customers, it needed to link this information with proprietary data sets owned by others to extend its risk analytics solution to insurance companies. To execute the business model at Best Buy Health, the Geek Squad needed to have empathy skills in addition to technical skills to install health monitoring equipment in the homes of people who had just returned from hospital stays.

Capacities: To manage a business operating at increasing volumes, new ventures need to develop capacity in terms of fulfillment, logistics, manufacturing, customer service, call centers, and so on. This is a critical point for a venture, because it must expand from operating in experimental mode with a few highly engaged test customers to addressing the total market opportunity with many customers it does not know. Thus, the scaling path must anticipate the major stress points that are looming ahead, such as meeting customer demand, processing customer returns, and supporting solution implementations.

To achieve this, the leadership team has to identify which capacities will be needed in order to scale and prioritize them based on when they will be

needed. Deloitte, for instance, was able to meet the demands of its new crowdsource talent unit, Pixel, during its pilot phase. But its leaders realized that satisfying client demand at scale would be critical to its success.[11]

Adding capacity is a double-edged sword: Moving too slowly can choke off growth during the drive to scale, but moving too quickly can sink the venture by investing too far ahead of market development. Venture leaders should keep in mind that the scaling path is not a preset plan. Rather, it is a set of hypotheses about what assets are needed to scale that must be continually validated with data.

3 Think Through Options for Acquiring Needed Assets.

Venture leaders can follow four main approaches to obtaining the assets needed in the new venture and assembling its scaling path. Each presents different benefits and trade-offs.

Leverage: There is a clear advantage to leveraging the assets already available within the company: It enables the new venture to scale faster than entrepreneurial startups.[12] The claim that Best Buy staked in the health care market rests in part on the Geek Squad. Best Buy Health was able to leverage the brand's existing trusted access to people's homes to persuade several hospital systems to enter into partnerships.

It can be hard for new ventures to negotiate access to existing assets if the business units that control them are more focused on short-term results than on growing new ventures. Deloitte, for example, had to neutralize resistance from its client relationship partners, who were the key sales channel for Pixel, by using a combination of social pressure and financial incentives.[13] At Best Buy Health, DiSanzo estimates that she spends half of her time contributing to the larger corporate strategic, talent, and innovation agenda. She does so to build the internal social capital needed to support scaling at the company.[14]

As a venture scales, leaders must shift their attention from R&D resources to building the assets that enable market adoption.

Build: Early in the life of a venture, the assets needed for market differentiation are often built by R&D and technical teams. As the venture scales, however, leaders must shift their attention to building the assets that enable market adoption. German engineering firm Bosch has built a sizable franchise for its electric drive system, which can be easily integrated into the frames of road, mountain, and leisure bikes. But the company's efforts at building a network of bike retailers has been as instrumental in the business's success as its core technology. Initially, the retailers were unfamiliar with the new technology and resistant to selling it. To overcome that barrier, Bosch built a customer service capability and provided training, a self-service web portal, and an in-store diagnostics kit that won over thousands of small bike shops.[15]

Acquire: When a new venture lacks assets in the core business and building them is too costly or time consuming, acquiring them from an established or startup company is a logical route for getting to scale. Best Buy Health made a number of acquisitions to obtain assets needed to connect health care payers, providers, and customers. For instance, it acquired GreatCall, a subscription service for the elderly for emergency medical assistance activated via mobile phones and other connected devices; and Critical Signals Technology, which added partnerships with 1,500 health care payers.

Although acquisition-led strategies may satisfy a desire for immediate results, there is consensus that corporate acquisitions, on average, fail and that the value of write-offs exceeds gains by a wide margin.[16] LexisNexis provides a counterexample. The acquisitions of Seisint and, several years later, ChoicePoint made the company's public records assets more valuable, enabling it to leap over startup competitors to become a leader in risk analytics.

Partner: In the era of platforms and ecosystems, the leaders of successful corporate ventures are increasingly gaining access to assets through partnerships. These mutually beneficial relationships can be formed more rapidly and have lower risks than buying assets.

Because Bosch lacked the capacity to service the thousands of independent bike shops that were selling e-bikes with its drive systems, it entered a partnership with a component manufacturer, Magura, and used Magura's existing distribution network to deliver diagnostic kits and spare parts to retailers.

As the four asset-sourcing options described

Trigger-point decisions are moments of no return, where the strategic stakes or level of investment required is much higher.

above suggest, no one option is always right for corporate ventures. Rather, what differentiates the successful ventures from the unsuccessful ones is the ability to combine these approaches to construct an economical and timely scaling path.

4 Adapt the Team and Organization to Support Scaling.

As with entrepreneurial startups, the organizational needs of corporate ventures change as they embark on the path to scale. In fact, we found that leadership teams, as well as the position of the venture in the corporate structure, often change as the new venture seeks scale, because the primary strategic thrust changes so fundamentally from the ideation and incubation phases of innovation.

During scaling, the new venture's workforce tends to grow rapidly as the venture is called upon to execute an expanding scope of activities, such as supply chain management, distribution, and customer service. Meanwhile, the focus on rapid learning during incubation, in which leaders try to avoid overcommitting to a single product concept or value proposition, gives way to a focus on operational rigor and repeatability.

These new demands often require a different leadership profile — one that emphasizes operational capabilities. One study of high-tech startups found that the ability of the company to adapt to these new requirements was one of the key predictors of whether it would grow to $1 billion in revenue.[17] The problem, as research conducted by Dutch psychologist Peter Robertson demonstrated, is that founding teams can get stuck in the early phases of growth and fail to scale because they lack sufficient strategic diversity.[18] Robertson's prescription to "always change a winning team" is one that was followed by Best Buy Health. In 2020, DiSanzo was hired to run Best Buy Health and brought additional industry capabilities to her team, including a chief technology officer, new sales leaders, and an additional board of directors with health care experience.

The positioning of new ventures within the corporate structure also may need to change as scaling begins. LexisNexis Risk Solutions started in a business unit two layers down from the CEO before moving up to the group level. At Deloitte, Pixel followed the opposite path: It started at the corporate level and was later moved into a business unit to scale (while remaining a separate unit). This enabled the venture to more easily align with the client-facing partners needed to sell its services to the firm's customers.

5 Anticipate and Prepare for Trigger Points.

Scaling paths sensitize leaders to the decisions they need to make to convert a promising new venture into a high-growth business. However, not all of the steps on the path are equal; some are qualitatively different and can accelerate the progress to scale. These trigger-point decisions are typically moments of no return, where the strategic stakes or level of investment required is significantly higher than for less potent decisions. Amazon calls these decisions "one-way doors" because they entail commitments that are difficult, if not impossible, to reverse.

LexisNexis's leaders knew that the acquisition of ChoicePoint, an insurance industry data company, would be a trigger point for scaling the business.[19] This was not only because of the price it paid — at $1 billion, it was the largest deal the company had yet made — but also its strategic value. They knew it would be a launch point into the insurance industry and give the company the ability to offer breakthrough products, such as one that would automate the collection of customers' data when they applied for new automotive coverage. Similarly, Best Buy's acquisition of Current Health was a trigger point in that it provided the remote care management platform that connected the health devices in customers' homes to care providers. The acquisition showed providers that Best Buy could leverage its consumer reach to drive the adoption of in-home health technologies.[20]

Non-trigger-point decisions are ones from which an organization can withdraw at little or no cost. They offer new ventures the opportunity to learn about a potential step on the scaling path and adapt

their strategies accordingly. Best Buy's approach to over-the-counter hearing aids is a good example. Best Buy piloted hearing devices internally with a small subset of employees. Then, in October 2022, following the ruling by the U.S. Food and Drug Administration, the company launched a selection of nearly 20 hearing devices online as well as a smaller set from Best Buy stores. Along with the devices, the company launched an online hearing assessment to help consumers identify their level of hearing loss and help determine which device is best for them.[21] Best Buy made a wise scaling choice: a low-risk partnership, a captive audience to generate feedback, and limited exposure in a small number of stores.

Trigger points are qualitatively different because of the scale of commitment involved, the number of customers to be served, the amount of capital to be deployed, or the liabilities involved. Identifying these factors in advance by being explicit about the scaling path can help the leaders of new ventures anticipate trigger points and prepare themselves — and their stakeholders — for the major commitments they require.

This is a key to scaling success. A frequent complaint of corporate innovation leaders is top management's reluctance to invest in new ventures: In our research, it was the No. 1 barrier, cited by 60% of companies. However, we learned from our interviews that this reluctance often stems from top leaders being surprised by the scale of the commitments they are being asked to make. The decision to invest significant capital to back a new business is totally different from a much larger acquisition in the core business, where there is data, competence, and a track record. When leaders of new ventures highlight potential trigger points in advance, it gives top leaders the time they need to understand and grant big asks.

SCALING PATHS ARE REASONABLY SIMPLE to use: They require only a clarity of ambition and an understanding of the assets needed to access the customers, capabilities, and capacity that can transform an idea into a full-fledged business. While most leaders of new ventures already talk about what it will take to reach scale, the concept of a scaling path provides them with a language and structure to elevate the discussion. A scaling path embodies the missing third discipline in corporate innovation. Leaders of new ventures can use it to learn and iterate as they go, adding new options and eliminating those that become dead ends. Scaling is both art and science, and with the help of a scaling path, it can be managed with the same level of discipline and success that we have come to expect of ideation and incubation. ■

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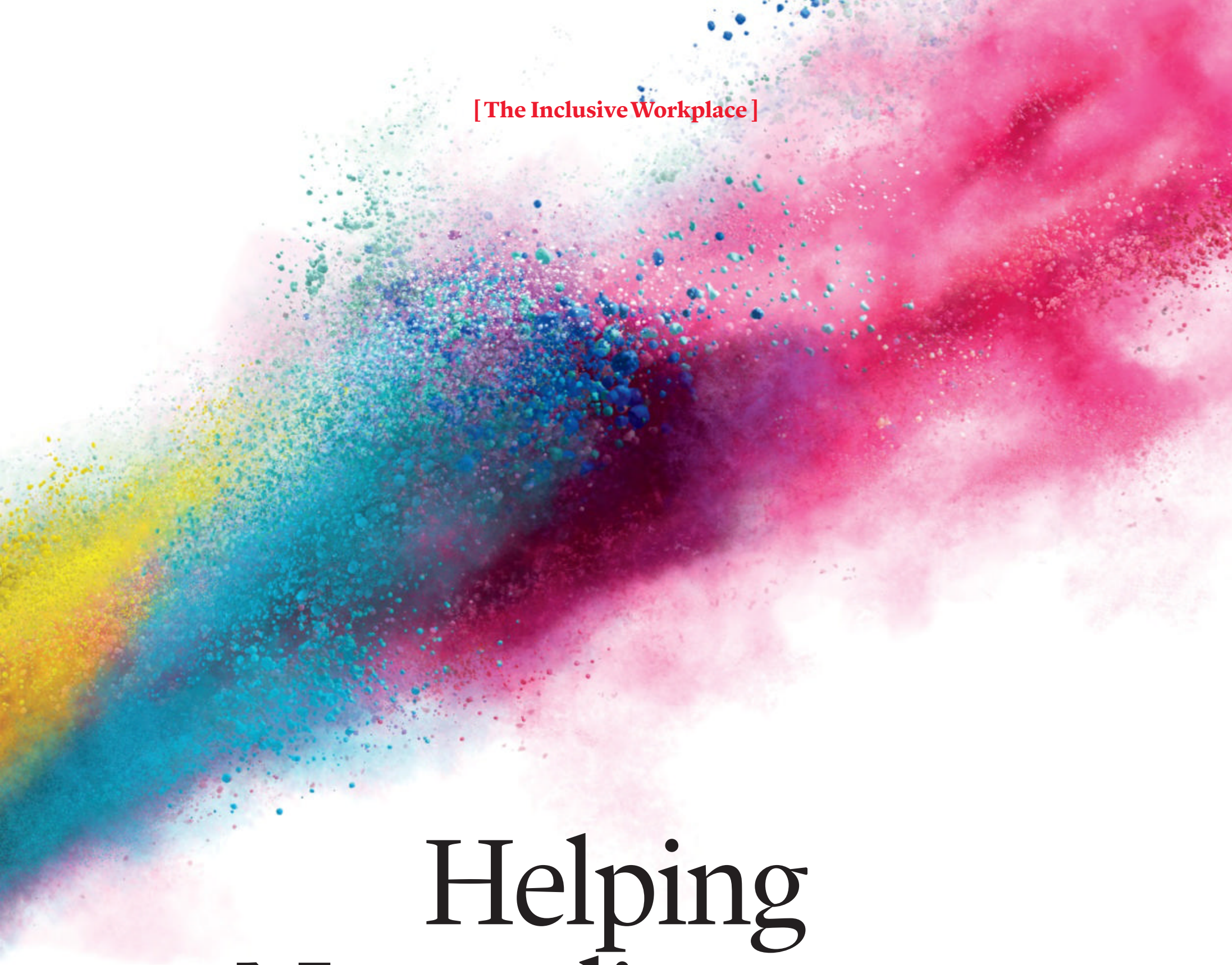

Helping Neurodivergent Employees Succeed

Neuroinclusion will remain elusive if managers don't embed support activities throughout the employee journey.

By Emily R. Russo, Dana L. Ott, and Miriam Moeller

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HOW WELCOMING IS YOUR organization to neurodivergent employees, and how successful is it at engaging them effectively in the workplace? When it comes to hiring, management, and retention in the workplace, individuals with differences such as autism, dyslexia, or Tourette syndrome are often discounted by employers, to the detriment of the individuals and employers alike.

Neurodiversity recognizes that "there is no single way for a brain to be normal" and that these differences benefit organizations and society at large.[1] Conditions such as ADHD, autism, dyspraxia, dyslexia, dyscalculia, and Tourette syndrome may all be placed under the banner of neurodiversity, but neurodivergent individuals do not represent a homogeneous group; they are a large, diverse cohort that can vary greatly in terms of their skills and abilities.

Although the global market for diversity, equity, and inclusion is projected to grow to a staggering $28.9 billion by 2030, the vast majority of DEI programs overlook *neuro*diversity.[2] Despite estimates that 15% to 20% of the global population is neurodivergent, only 1 in 10 organizations specifically includes neurodiversity within its DEI programs.[3]

Some organizations focus on neurodiversity as a form of disability inclusion, although many members of the neurodivergent community object to their characteristics being framed as disorders, disabilities, differences, or diseases.[4] We propose simply that neurodivergent individuals can meaningfully contribute to the workplace when organizations recognize their strengths and support their needs.

Incorporating neurodiversity into the larger conversation about DEI is important for reasons of fairness and inclusion and because of the advantages that neurodivergent individuals can bring to organizations. Companies such as Deloitte, Hewlett Packard Enterprise, Microsoft, Ernst & Young (EY), JPMorgan Chase, and SAP are among those that have recognized the benefits of introducing neurodiversity programs.

SAP's neurodiversity program has improved its employer reputation, innovation capabilities, and employee engagement. For example, a technical issue that a neurodivergent employee helped resolve resulted in $40 million in savings on a single project.[5] Similarly, JPMorgan reports that participants in its neurodiversity program complete tasks more quickly and are significantly more productive than the rest of its workforce.[6] Meanwhile, EY reports that its neurodivergent employees excel at innovation, learn how to automate processes faster, and have identified process improvements that have cut technical training time in half.[7]

The Challenges Faced by Neurodivergent Employees

Despite the advantages that a neurodiverse workforce can bring to an organization, many neurodivergent individuals face challenges that may restrict their ability to gain and sustain employment and can find themselves excluded from the workplace altogether.

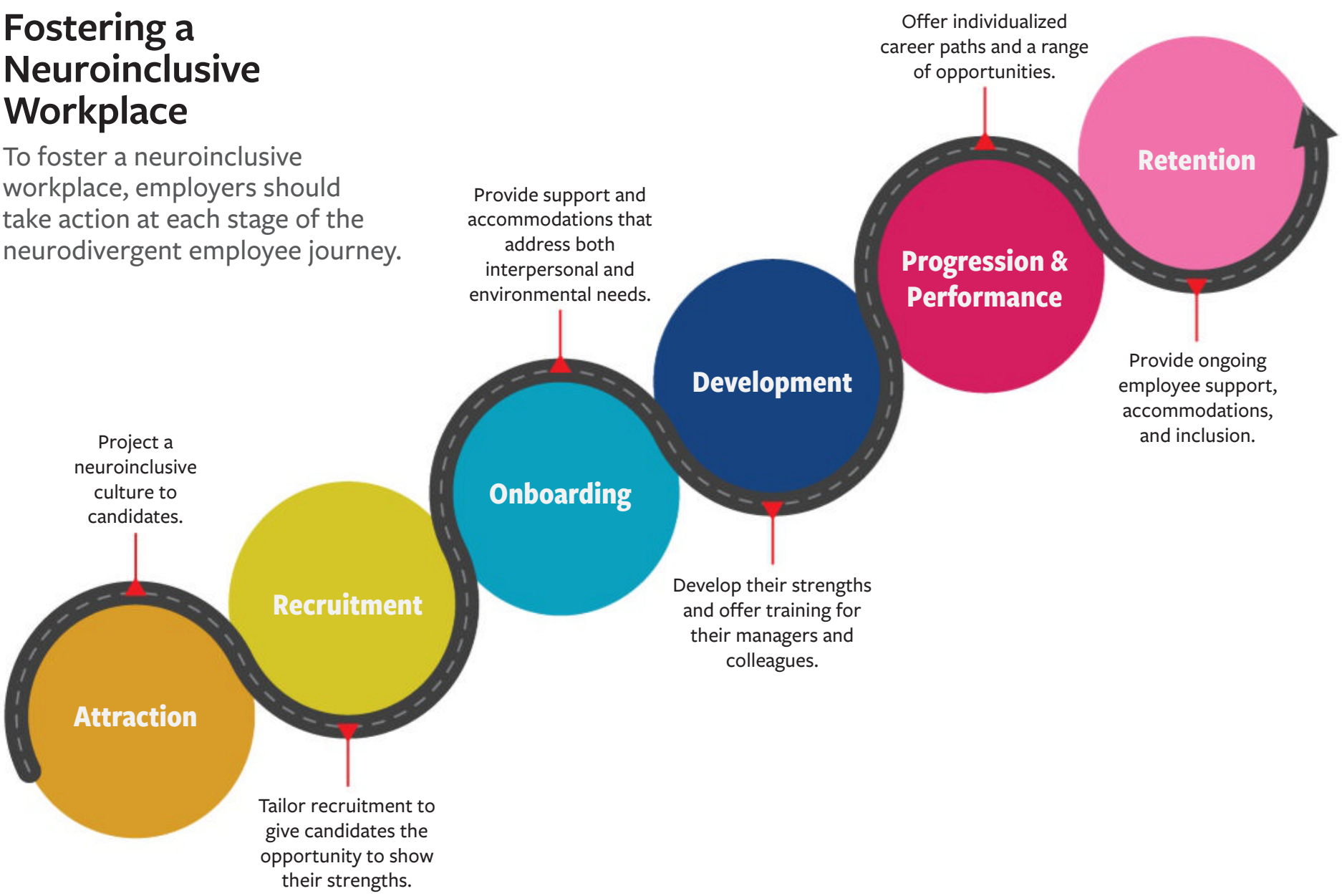
Such challenges are often related to developing interpersonal relationships. For example, neurodivergent and neurotypical individuals often convey and interpret social cues and empathy differently. Behaviors that some neurodivergent individuals may display during interviews, such as a lack of eye contact, an atypical speaking volume or rate of speech, and difficulty reciprocating nonverbal cues, can diminish rapport between an interviewer and candidate and deter a company from hiring the applicant.

The environment matters, too. The typical workplace is full of bright lights and noisy, open spaces, which, coupled with practices such as hot-desking, can exacerbate sensory challenges for some neurodivergent individuals. Even with the recent acceleration in remote work, which may allow neurodivergent employees to avoid sensory overwhelm at the office, they might still find communication, social understanding, and work-life balance difficult.[8]

All of these factors have contributed to unemployment and underemployment rates as high as a shocking 85% to 90% among neurodivergent individuals.[9] Unless organizations engage in targeted efforts, neurodivergent job candidates and employees will be left unsupported, potentially exposed to psychological harm, and unable to reach their full potential. At the same time, managers will feel the strain of not knowing how to support their neurodivergent employees, and organizations will miss out on an important, undervalued, and often overlooked pool of talent.

Fostering a Neuroinclusive Workplace

To foster a neuroinclusive workplace, employers should take action at each stage of the neurodivergent employee journey.


Project a neuroinclusive culture to candidates.
Attraction
Recruitment
Tailor recruitment to give candidates the opportunity to show their strengths.
Onboarding
Provide support and accommodations that address both interpersonal and environmental needs.
Development
Develop their strengths and offer training for their managers and colleagues.
Progression & Performance
Offer individualized career paths and a range of opportunities.
Retention
Provide ongoing employee support, accommodations, and inclusion.

Through our research and consulting work, and discussions with a range of organizations, we have found that many managers are unsure about how to support neurodivergent employees. Using the employee journey as a guide, we suggest support mechanisms that can be implemented at each stage: attraction, recruitment, onboarding, development, progression and performance, and retention. This ensures that neurodivergent employees are not only recruited and retained but also managed and supported during their time with an organization so that they can thrive. We explain what activities to include at each stage.

Stage 1: Attraction

In order to attract neurodivergent candidates, organizations must establish a neuroinclusive culture and communicate it to prospective hires. Appointing neurodiversity champions or executive sponsors for neurodiversity initiatives, as EY has done, will highlight the significance of the issue and motivate change in the wider organization.[10] An employee resource group could also be established to enable those who identify as neurodivergent to meet, share experiences, and support one another, as well as advocate for supports in the workplace and potentially educate colleagues outside of the group. It's also important to increase current employees' awareness of neurodiversity and its benefits by sponsoring information sessions, distributing articles, and sharing stories on the topic throughout the organization.

This neuroinclusive culture then needs to be projected through the organization's employer branding. When candidates visit your corporate websites or view social media posts, they should see evidence that your organization values and enables diversity and inclusion generally and is also specifically a neuroinclusive employer.

To appeal to neurodivergent candidates, construct your job ads to avoid misinterpretations. Specifying the tasks a successful candidate needs to be able to perform in the role is more effective than detailing a long list of mandatory and desired attributes.[11] Individuals with autism, for example, often take things literally and therefore might apply for a job only if they meet all of the listed criteria. Organizations should also consider advertising

positions on nontraditional platforms, such as Instagram or podcasts, which may be effective in reaching candidates who prefer nontextual media.

Stage 2: Recruitment

Traditional recruitment strategies tend to favor candidates with strong social skills, professional networks, and conventional career trajectories, which neurotypical and neurodivergent candidates may not have in equal measure. Neurodivergent individuals can have a wide variety of talents and may be well suited to almost any role, so organizations should avoid the mistake of identifying roles specifically for the neurodivergent under the assumption that it will result in a better fit.

Organizations should instead adopt a strengths-based approach to recruitment and be conscious that all neurodivergent individuals have different strengths, challenges, and professional and personal experiences.[12] Understanding these differences can help you better match a neurodivergent individual's specific strengths and experiences to a role. Neurodiversity recruitment and consultancy firms can also assist with sourcing and recruiting neurodivergent individuals and in adapting strategies to be more effective and inclusive.

Recruiters should also consider allowing candidates to use formats such as video and artwork as an alternative to written applications. In addition, candidates should receive as much information as possible at all stages of the recruitment process, to limit surprises and potential discomfort. Ease candidates' anxiety by providing details regarding what questions may be asked in interviews, who will be attending, the physical environment, how to access the building, and where facilities such as restrooms, drinking water, elevators, etc., are located.

Interviewers should also be flexible. For example, at GCHQ, the U.K.'s Government Communications Headquarters, candidates can bring notes and mind maps into interviews, are allowed additional time to reflect, and can defer answering questions until later in the interview.[13] This can greatly assist neurodivergent candidates who find it challenging to process and communicate information verbally. Interviewers can also avoid asking multiple questions at once, to give candidates time to process and respond to each one. Additionally, if a candidate chooses to disclose their neurodiversity in their application, ask whether any reasonable adjustments can be made to accommodate them in advance of the interview.

Recruiters and hiring managers should consider multiple means of assessing candidates, in addition to or instead of the traditional formal interview, to allow neurodivergent candidates the opportunity to show their strengths. Neurodivergent individuals may have challenges with social interaction and communication, which can prevent them from effectively connecting with the interviewer and communicating their skills. Some candidates may prefer to demonstrate what they can do rather than try to explain their skills and abilities. This makes skills-based assessments, informal conversations, group activities, presentations, work trials, and practical assessments potentially more effective in understanding a candidate's capabilities. You can use a variety of approaches, such as Pymetrics games, Lego Serious Play, and robotics projects as platforms to create more efficient, effective, and fair assessments, so long as they are accurately aligned with the skills required for the role. During the pandemic, Microsoft developed Minecraft worlds with customized challenges that enabled small groups of candidates to work together, and found that this enabled them to showcase communication, teamwork, problem-solving, and leadership skills.[14]

Stage 3: Onboarding

New employees should be given as much information as possible before their first day to help alleviate uncertainties, and this can be especially helpful to neurodivergent employees who may have trouble reading social or

Key Activities for Hiring Neurodivergent Employees

Attraction

1. Appoint a neurodiversity executive sponsor.
2. Build and communicate a neuroinclusive culture and employer brand.
3. Emphasize tasks to be performed, rather than desired attributes, in job advertisements.

Recruitment

1. Tailor recruitment practices to align with a strengths-based approach.
2. Support flexible application formats.
3. Offer alternative and practical candidate assessments.

Onboarding

1. Provide information and make accommodations before the first day of work.
2. Communicate clearly and offer information in multiple formats.
3. Appoint internal and/or external support people.
4. Address any sensory challenges in the office environment.

cultural cues. Provide details such as what time to arrive, where to go, who they will be meeting with, and what the workplace dress code is. Spell out as much as possible about the organization's culture and norms, including working hours, break times, communication channels, and social events. If a new employee has disclosed a neurodiversity, ask them before their start date whether any reasonable adjustments can be made in the workplace to help support them. While neurodivergent individuals' needs can differ from those of the general population, there can also be considerable variation within the community, so it is important to ask.

Ensuring that neurodivergent employees are provided with clear and direct communication, especially from their managers, is important. Joking, sarcastic, or informal approaches can sometimes lead to misunderstandings, and managers may need to be explicit when explaining situations and expectations. It may be helpful to prioritize written over verbal communication and to provide clear, concise information about job requirements and performance expectations while ensuring that these are understood by the neurodivergent employee. Making multiple written and visual communication tools available to neurodivergent employees, such as voice-to-text and text-to-voice, mind mapping, and on-screen reading software, has also proved to be effective and helpful.[15]

Organizations should also consider making internal and external supports available to neurodivergent employees. Internal organizational supports can include buddies (colleagues who can assist with navigating the specific social norms of the organization), mentors (a more senior person who can assist with providing organizational knowledge and career advice), and employee resource groups. Neurodivergent employees can seek assistance from such resources should they wish to disclose their neurodivergence to others, discuss their preferred working style, or explain how their neurodiversity may influence their work.

External supports can include coaches (who can offer guidance on managing finances, improving emotional well-being, and achieving work-life balance), vocational counselors or outside affinity groups, and community and government resources. Placement organizations like Specialisterne offer post-employment support over a number of months for neurodivergent employees and their managers.

In some cases, integrating the internal and external support mechanisms may be helpful. For example, the mentor and coach might communicate about specific coaching opportunities related to the neurodivergent employee's job or career aspirations.

Many neurodivergent individuals have sensory challenges associated with lighting, sounds, smells, and textures and might require special accommodations in their work environment. Housing finance company Freddie Mac has found that providing softer lighting and noise-canceling headphones, or positioning the individual in a quiet area of the office, has helped make its neurodivergent employees feel more comfortable and be more productive.[16] Allowing employees to bring sensory support tools into the office and providing them with designated quiet spaces can also assist with productivity. For example, an employee with Tourette syndrome reported that having a quiet space to go to when her tics were active was a particularly helpful support mechanism, because she felt more comfortable and did not feel that she was disturbing colleagues.[17]

It is also not uncommon for neurodivergent individuals to enjoy routine and dislike change, making unexpected changes in routine something to either avoid or flag in advance. Hot-desking, for example, can be a real challenge for neurodivergent employees.[18] Alternatively, allowing for flexible work hours and locations can allow employees to shape their work environment to best suit their needs.

Stage 4: Development

The training and development of neurodivergent employees calls for the same personalized, strengths-based approach used in recruiting them. Rather than

Key Activities for Managing Neurodivergent Employees

Development

1. Make training content and formats appropriate for neurodivergent employees.
2. Provide unconscious-bias training to all employees.
3. Implement neurodiversity-specific training for all employees.

Progression and Performance

1. Utilize job crafting.
2. Set KPIs based on the position description.
3. Support flexible career paths.

Retention

1. Upskill all managers to support neurodivergent employees.
2. Measure organizational performance against neurodiversity goals.
3. Support disclosure and encourage employees to ask for what they need.

focusing on the potential deficiencies or weaknesses of the individual, aim to further develop their strengths or apply their strengths in new and innovative ways. Ensure that training is available in multiple formats so that the neurodivergent employee can access it in the format that suits them best.

Creating a neuroinclusive organization calls for specific training and development efforts that benefit neurodivergent employees and the wider workforce. Unaddressed biases can sabotage workplace diversity initiatives. People often disfavor a person or group that acts or displays behaviors contrary to their expectations, but in many cases they aren't aware of such biases and how strongly they influence their decision-making and interactions with others.[19] To ensure that neurodivergent employees are treated fairly and have opportunities to contribute to and advance in your organization, all managers and staff members must undertake training that acknowledges and attempts to mitigate conscious and unconscious biases including toward neurodivergent individuals. Such training must dispel myths about neurodivergent people and offer guidance on how to work effectively with them.

Managers are key to the success of neurodiversity programs, but they need to be educated about how to support their neurodivergent employees.[20] We recommend that organizations collaborate with a neurodiversity consultant to develop additional support for both neurodivergent and neurotypical employees. For example, DXC Technology provides autism awareness training for all staff members at sites where autistic employees are working. However, disclosing that there is a neurodivergent employee on a team is a privacy issue and requires the individual's consent. If privacy is breached, this could negatively impact the neurodivergent employee and their team. When an individual discloses a condition to HR or their direct manager but does not want their wider team to know, accommodating them is about listening and understanding what they want the organization to do in order to support them. Ultimately, it should be the individual's choice regarding whether they wish to share their condition, and they should be supported regardless of their disclosure decision.

Stage 5: Progression and Performance

Progression and performance management must be personalized to ensure that neurodivergent employees are supported. Avoid using standard position descriptions across the organization. Instead, consistent with the strengths-based approach, offer flexibility in job requirements by allowing position descriptions to be amended to fit the strengths of employees. This customized

Managers find that making simple changes to support neurodivergent employees makes them better managers to all employees.

employment strategy is known as *job crafting* and can be codesigned by the employer and employee. Job crafting involves adding or removing tasks to suit the strengths or weaknesses of the incumbent.[21] For example, a design engineer may not be required to attend client meetings, allowing them to use their strong design skills without the stress and potential challenges of interacting with clients.

KPIs should be agreed upon based on the position and checked for any inherent biases. As with all employees, performance should then be evaluated against the agreed-upon KPIs. However, when you are engaging in performance discussions, it is important to remember that neurodivergent employees may not have the same level of self-confidence or ability to talk up their own performance as their neurotypical colleagues.

Organizations should also ensure that personalized progression plans address the short- and long-term career goals of individuals, including pathways to management-level positions, and offer flexible career paths to help individuals achieve their potential. For example, in multinational enterprises, global assignments may be seen as an important part of career progression, but this may not suit the interests or strengths of a neurodivergent employee. (Such assignments would need to be carefully considered and managed, given that the acceptance and support available to neurodivergent employees may vary significantly across national and cultural boundaries.) Likewise, within professional services firms, senior roles typically involve responsibilities related to client relationship management and business development. Some neurodivergent individuals, however, may find this kind of social interaction challenging and should be given opportunities to advance on the basis of their subject matter expertise.

Stage 6: Retention

Historically, the turnover rates for neurodivergent employees have been higher than those for neurotypical people because of the persistent lack of inclusion and support for neurodiversity.[22] This highlights how important it is for managers to play a role in retaining neurodivergent talent and provide ongoing support to address

neurodivergent employees' interpersonal and environmental needs in the workplace.[23] However, some managers have had no prior experience working or interacting with someone who is neurodivergent and will need to upskill their capabilities to effectively empathize with and support these employees — and improve their prospects for retention. Ask for feedback from neurodivergent employees and all other relevant stakeholders on a regular basis to ascertain whether any adjustments or further training is needed.

Your organization's neurodiversity strategy should be subject to regular review, by assessing the recruitment and retention of neurodivergent individuals against the organization's goals. Ensure ongoing success with a framework that assesses the performance of the organization's neurodiversity initiatives and holds stakeholders accountable for meaningful change. Based on the performance outcomes, your organization should be ready to adapt when challenges arise at any stage of an employee's journey.

A significant hurdle in assessing the composition of your workforce is employees' reticence to disclose their neurodivergence. Employees tend not to make such disclosures out of fear of being stigmatized. Ensuring that your organization is taking steps to create a neuroinclusive culture can increase people's willingness to discuss their neurodivergence. Employees should also be able to ask for support or accommodations without having to explicitly state a diagnosis.

AS YOU ADVANCE YOUR NEURODIVERSITY efforts, it's important to remember that not every neurodivergent person is the same. Rather than making assumptions, get to know each employee as an individual and ask what adjustments will help to support them. It's also important to keep in mind that no single support or accommodation will be relevant to every neurodivergent individual, and you need to personalize the support your organization provides, offering flexible workspaces, conditions, communication, and management. Most support and accommodations for neurodivergent candidates and employees do not involve significant expenses. Many involve no cost at all but deliver an unexpected benefit: Managers have found that making simple changes aimed at supporting neurodivergent employees have helped them become better managers to all employees.[24] ■

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How Digitally Mature Is Your Finance Office?

CFOs who are digital leaders prioritize developing seven key capabilities to unlock the power of data and analytics.

By Kristof Stouthuysen

THE CHIEF FINANCIAL OFFICER OF a large Indian hospital group had a problem. To optimize spending and enable the organization to provide the highest levels of patient care, she had to analyze hundreds of indicators: patient information, such as age and insurance; clinical data, such as treatment and laboratory tests; operational data, such as food quality and the responsiveness of medical personnel; and financial data, such as costs and revenues. The hospital's management software was limited in its ability to handle this complex analysis. To address this challenge, the CFO installed a new decision-support system powered by machine learning. After action was taken on the resulting insights, patient satisfaction scores increased by 12%, and the hospital group enjoyed significant savings by eliminating activities that didn't add value.

Like the hospital CFO, finance leaders in a wide range of industries are trying to integrate data and analytics into finance office processes to improve operations. However, not all CFOs have cracked the code for capitalizing on the promise of these tools, in particular new machine learning applications. In a 2022 study by Gartner, 80% of CFOs said they believe that finance needs to significantly accelerate implementation of machine learning and artificial intelligence in order to effectively support and protect the business.[1] Why are so many CFOs slow to take full advantage of these technologies, and what can be done to bring them up to speed?

In my work as an academic researcher and consultant, I've studied hundreds of CFOs and senior finance leaders from more than 20 industries at companies with revenues ranging from $250 million to more than $20 billion. In conducting research that included interviews and a survey, I sought to understand how CFOs use digital technologies in their finance offices, what they want to achieve through

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digitization, and the main challenges they face in developing these capabilities. I found that the CFOs who had successfully deployed advanced analytics were able to deliver more real-time insights, reduce human error and bias, and speed up processes and decision-making.

Digital finance leaders also differentiated themselves by spending a greater portion of their time on *value creation* activities — such as performance management, mergers and acquisitions, pricing, and strategic planning — and *value protection* activities, including fraud detection and risk management. They spent less time on *transaction processing* activities, such as invoicing, payment processing, and accounting. Most had already gained efficiencies by automating clerical tasks and other manual processes.

I identified seven advanced capabilities that underlie these leaders' accomplishments and serve as building blocks for transforming finance into a data-driven function that creates value from advanced analytics. I share detailed descriptions of each below, along with an assessment tool that can be used to evaluate the current level of data analytics maturity at any stage of the finance office's digital journey.

Seven Essential Capabilities for Digital Finance Leaders

1. Use advanced analytics to meet strategic needs. Many organizations still expect finance to keep to its traditional operational role of maintaining ledgers, processing transactions, and delivering required reports. More advanced finance leaders, however, think in terms of *digital strategy* and look for opportunities to apply technology to advance the strategic aims of their organization.

The CFO of a European pharmaceutical company was asked for clearer, faster, and richer insights that could inform the company's pricing strategy. In response, the company built a new machine learning model that generated dynamic forecasts of drug prices that almost instantly reflected changes in the cost of raw materials, the cost of production, regulatory guidelines, the cost of inventory, the supply of drugs across the globe, and other market and product-related variables.

Armed with this information, business leaders could quickly adjust pricing based on a real-time feed of market data and drug characteristics. This gave the finance department a more active role in developing and implementing pricing strategies and enhancing the value of the company.

Another CFO, at an international retailer,

Assess Your Finance Function's Data Analytics Maturity

ANSWER THE FOLLOWING QUESTIONS to identify the data and analytics maturity of your finance function and where it is on the analytics journey. For each of the seven dimensions, add up the points corresponding to your answers and divide the total by 3 to obtain the average score for that dimension; scores of 4 and above indicate areas of stronger capabilities, while scores below 3 signal the need for remedial action.

You can also calculate an overall average score by adding up the average scores for all dimensions and dividing by 7. Based on this aggregate measure, the assessment tool differentiates between three levels of maturity: An overall average score that is below 3 indicates that a team is lagging in digital finance capability; a score between 3 and 4 means that a team is developing digital finance capability; and a team with a score of 4 or more can be considered leading in digital finance capability. This single metric can help CFOs track the team's progress over time or, in the case of a large multinational enterprise, compare data and analytics proficiency across the various finance offices.

Strategic Use of Advanced Analytics

The extent to which the finance office focuses on using advanced analytics and digital technologies to be more forward-looking.

Model Explainability

The extent to which senior finance leaders display sufficient practical knowledge and understanding of how advanced analytics, such as machine learning, can help analyze and process data.

Cross-Functional Data Collaboration

The extent to which finance makes data more accessible and shareable across functional silos and/or business units.

Analytics Skills

The ability to attract the right analytics skills in the finance function and provide relevant training to members of the team in data and analytics applications.

Exploration and Experimentation

The degree to which your finance team stimulates new analytics solutions and explores the needs of internal and external stakeholders.

A Data-Driven Culture

The extent to which your finance department is moving to a more data-driven culture.

Digital Inclusivity

The extent to which finance employees can fully participate in and benefit from analytics applications and data and technology services.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Senior finance leaders consider the use of digital technologies and the use of advanced analytics, such as machine learning, a strategic priority.	1	2	3	4	5
The digital transformation of the finance team is an important organizational objective.	1	2	3	4	5
Analytics have helped us transform from a backward-looking observer into a forward-looking partner.	1	2	3	4	5
Senior finance leaders demonstrate a clear understanding of the latest techniques, such as machine learning, to analyze and process data.	1	2	3	4	5
Senior finance leaders convey how advanced analytics can be used to drive better decision-making.	1	2	3	4	5
Senior finance leaders regularly stress the explainability of the analytical models' output.	1	2	3	4	5
Investments in data platforms allow us to access data across functional departments and business units more effectively.	1	2	3	4	5
We work closely together with other functional domains and business units to analyze data.	1	2	3	4	5
We drive clear organizational guidelines on data acquisition, usage, and storage.	1	2	3	4	5
We attract people with the appropriate digital and analytics skills.	1	2	3	4	5
To ensure the adoption of analytics, we provide the necessary training and support.	1	2	3	4	5
We promote data and advanced analytics skills through the use of workshops and the development of use cases.	1	2	3	4	5
We regularly observe how stakeholder preferences change and brainstorm how emerging analytics applications can help us to address those changes.	1	2	3	4	5
We have several pilots in the finance office to explore the use of advanced analytics and new digital solutions.	1	2	3	4	5
Senior finance leaders put a spotlight on finance employees who have piloted a new analytics application or solution.	1	2	3	4	5
We use rewards and incentives beyond financial targets, such as analytics training completed, data accessibility, and stakeholder experience, to promote a data-driven culture.	1	2	3	4	5
Senior finance leaders underscore the relevance of data and the use of advanced analytics in the various accounting and finance areas.	1	2	3	4	5
Senior finance leaders correct the misperception that data is just for techies.	1	2	3	4	5
We provide digital and analytics skills training programs based on someone's individual needs.	1	2	3	4	5
Everyone on the team has easy access to reliable and appropriate technologies, analytics applications, and data services.	1	2	3	4	5
Senior finance leaders provide reassurance that everyone has equal opportunities and rights to participate in the digital transformation of the finance function.	1	2	3	4	5

recognized that advanced analytics could be applied to bolster the company's cybersecurity profile. The CFO worked with the CIO and the company's cloud provider to implement a machine learning capability that would identify sensitive financial data, intellectual property, employee information, and other data residing in the cloud and warn the company when the data was being accessed or moved in an unusual fashion.

Like these two CFOs, most of the digital finance leaders I spoke with said they consider technology and advanced analytics to be strategic priorities for protecting company assets and achieving measurably better business outcomes.

2. Unpack and explain machine learning outputs. Some people see machine learning models as a black box because it's unclear how they arrive at the predictions they produce. Digital finance leaders understand these limitations and push for *model explainability* — techniques and tools that can explain how models reach their results.

The CFO of a global car manufacturer found that explainability and interpretability were among the main challenges of using AI and machine learning to detect financial and credit risks. In such a context, it's critical to understand how a model is making predictions in order to confirm that it's not employing proxies for any demographic characteristics that would be illegal or unethical to consider when weighing a credit application.

One CFO and his team wanted to know why a machine learning model used to determine whether an applicant should receive a car loan was denying certain applicants loans but not others, and why it gave some individuals a 70% chance of defaulting but gave the average applicant only a 20% chance. They applied Shapley values, a method derived from game theory, to show the relative impact of each feature (or variable) on the eventual output of the machine learning model.[2] This showed the CFO and his team that home ownership, loan-to-income ratio, and credit card debt were the three most important variables for predicting car loan defaults.

Compared with other CFOs, digital finance leaders place a higher priority on understanding the inner workings of their analytical models and how they affect the results the models deliver.

3. Collaborate on data management across functions. The exponential growth in the size and complexity of data poses a significant challenge for finance teams as they seek to identify a *single source of truth* for data points used to derive actionable insights for the rest of the organization. Digital finance leaders have a clearly defined strategy guiding the collection and management of, and access to, this rising volume of data — and many play a crucial role in defining the overarching data strategy for the organization.

In developing a new analytics solution, the CFO of an Asian steel company first defined a data strategy and worked to align data standards across the enterprise, raising the issue to the top of the corporate agenda. His team's objective was to view revenues and profits by customer segment, not just at the product level. That meant identifying the core metrics of customer profitability, such as acquisition costs, order and churn rates, and service costs, and finding a consistent way to define those metrics across business and functional domains. They also implemented a data lake to streamline data sources and automated the process of tracking customer metrics. These improvements not only enabled finance to track the metrics it sought but also helped business units to respond more quickly than competitors to changing customer needs and to serve them more efficiently.

Digital finance leaders are much more likely to act as strong advocates for democratizing data across a company's silos, in stark contrast with more traditional finance leaders who treat information as power and often guard the data they possess.

4. Embed analytics skills. Digital finance leaders take steps to build data and analytics skills within their finance teams rather than relying on the expertise of specialists. This requires that they make sure the majority of finance team members receive relevant training in data science, data management, and programming. At the same time, the use of advanced AI tools has highlighted the need to develop communication and problem-solving skills and to learn to translate data into actionable insights. It's also important to encourage more experienced finance and accounting staff members to roll up their sleeves and start experimenting with potential data and analytics use cases and to help bring along those who may resist the use of data and new technologies.

To develop a team with a stronger orientation toward analytics, the CFO of an international hotel group stopped hiring candidates with traditional finance or accounting backgrounds and instead recruited data scientists, mathematicians, and data engineers. She provided these new hires with on-the-job training in the fundamentals of budgeting, financial analysis, compliance, risk management,

and other accounting principles. Senior practitioners were required to spend at least one day a week helping to develop the accounting and finance skills of the new staff members. Meanwhile, the new hires with more expertise in analytical techniques helped senior practitioners translate finance and business issues into questions that could be answered with analysis and data engineering capabilities.

5. Explore and experiment. Digital finance leaders rarely make linear progress toward the goal of successfully leveraging data and analytics: Many told me that they stumbled initially. It's critical that CFOs are patient, take an exploratory approach, and tolerate failure when experiments don't work as planned. It can take quite a while for AI-driven models to produce high-value outcomes, since they require adequate data, fine-tuning, and scaling.

To cultivate a culture of exploration and learning, the CFO of a construction engineering company rotated finance employees through other business units, innovation teams, and IT. These employees built important relationships, increased their understanding of colleagues' needs, and identified new opportunities for improving the finance function's offerings. The CFO then asked team members to use the knowledge they had gained to suggest ideas for using technology and advanced analytics to improve finance services and awarded bonuses and recognition to employees who submitted proposals. That generated excitement and encouraged the more-hesitant team members to bring their ideas forward.

6. Manage cultural change. Finance teams' often conservative, cautious culture may contribute to a resistance to new tools and new ways of doing things. Tax accountants who pride themselves on being absolute experts in tax law, for example, might reject the notion that a machine could provide better answers about tax optimization and thus ignore an AI tool's recommendations. Successful digital finance leaders take steps to establish a *data-driven culture* and explain how employees' adoption of advanced analytics and new technologies will enable them to contribute most effectively. For example, the CFO of an international IT company seeking to drive digital transformation made it clear to his finance team that they were expected to incorporate advanced analytics into their work and problem-solving. The CFO also created a booklet for the team's tax accountants demonstrating how combining their expertise with AI's tax optimization recommendations could increase the company's profits.

7. Include everyone on the team in digital efforts. Digital finance leaders give all team members opportunities to participate in the digital transformation and contribute to the team's success. An inclusive environment is one where everyone feels appreciated and can develop the right digital skills. Senior finance leaders need to make sure that everyone on the team has access to relevant training, technologies, and data and that learning new skills opens up opportunities.

A CFO at a leading telecom company found that almost half of the finance staff lacked the analytical and technology skills needed to achieve the company's goals; furthermore, many were engaged in activities that were likely to be obsolete in a decade. Instead of eliminating employees, the CFO encouraged them to learn new skills. In the first year of the program, the company was able to fill a majority of new job openings with internal candidates.

How to Get Started

Developing the capability to effectively leverage data and analytics in the finance function requires CFOs to take coordinated actions along several dimensions. To help them identify the investments they need to prioritize, I have mapped the insights from my research to a maturity model and corresponding assessment tool. (See "Assess Your Finance Function's Data Analytics Maturity," p. 54.) The results should indicate the analytics sophistication of the finance team and provide clarity about the skills and mindset that must still be developed to drive digital transformation forward. CFOs can repeat the assessment regularly to monitor progress and focus on improving weaker capabilities.

Each finance team's path toward the successful deployment of advanced analytics will vary based on its starting point. But the common themes I've identified among digital finance leaders can provide valuable direction along the way. ■

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Cashing Out Excellence

Why do so many leaders trade in long-standing capabilities for short-term results?

By Robert D. Austin, Robert H. Hayes, and Richard L. Nolan

WHEN SOUTHWEST AIRLINES SUFfered a post-holiday meltdown in December 2022, the trigger was a bout of adverse weather. But the storm hit Southwest harder than it did most airlines. The company's outdated computer systems collapsed, and years of underinvestment in technology, particularly staff scheduling systems, led to more than 16,700 flight cancellations over the holiday travel period. Amid the chaos, an executive's memo demanding proof of illness for the use of any sick days indicated a lack of trust in employees. The scenario contrasts starkly with what the company was once celebrated for: the pioneering development of an alternative short-haul airline concept, an unrivaled commitment to employees, and a reliance on front-line decision-making, all of which had led to industry-best operational excellence and customer service and the highest profits in the history of the industry.

Southwest's troubles are typical of a kind of leadership malaise we see in organizations that struggle to cope with disruptive events — such as the pandemic and its aftermath, which threw airports and airlines into operational turmoil and caused supply chains to collapse. To manage short-term appearances, these leaders and their predecessors had "cashed out" capabilities and allegiances they

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previously relied on to help them deal with unanticipated changes. It's a practice that has become too common and too accepted: Values, qualities, and relationships that have been honed over many years and served as the foundation for earlier successes are exchanged for near-term monetary rewards — typically in the form of cost reductions and stock price improvements that prove to be ephemeral.

We call this style of short-term leadership *performance hacking*. Performance hacking is the practice of giving the appearance of effective leadership by delivering on particular metrics, without delivering real performance. It involves companies and their leaders polishing financials through the calculated manipulation of investment planning and cost-cutting measures instead of prioritizing the creation of long-term value. The usual way to hack performance is by focusing on delivering short-term financial results to maintain steady trends that are unrealistic for major companies operating in complex environments but that leaders have come to believe — perhaps rightly — that the markets expect.

What performance hacking doesn't deliver is updated facilities and computer systems; investments in product/process research and development; the ability to master or exploit new technologies; or a loyal, capable workforce.

Performance-hacking leaders might, for example, reduce investments in key organizational capabilities, allow them to atrophy, or even outsource them — in effect, cashing out the less visible products or services that seem less urgent or less cost-effective at the moment, based on the convenient but often mistaken assumption that they can always be reacquired if needed in the future. They might skimp on employee pay and growth, which over time results in their more capable (and more expensive) employees leaving and less capable (and less costly) ones taking their place. Any subsequent external disruption then reveals how much an organization's know-how, resilience, and commitment have been sacrificed by managers' attempts to improve appearances.

Organizational leaders can't hack performance by themselves, of course; boards and investors must acquiesce. They often drive this behavior by rewarding executives for meeting short-term financial targets. Indeed, major investors with no stake in the company's long-term success and viability often instigate and drive the process, motivated by the potential for short-term earnings.

Performance hacking is not a new phenomenon. In 1980, one of us (Bob Hayes), with coauthor Bill Abernathy, identified elements of what we now call performance hacking and cautioned against the tendency of corporate leaders to focus too much attention on controls and surface appearances at the expense of the "drive trains" of their companies.[1] In many ways, the problem is worse today than when they first wrote about it. Adding to the urgency of this concern is that, as we will soon see, such practices appear to be spreading.

What is it that distinguishes performance hacking from strategically sound business decisions that may cut losses on bad bets or shift resources to invest in the long-term health of the business? The distinction is not always obvious to outside observers and often becomes clear only in retrospect. That said, examining recent examples where companies have clearly suffered as a result of performance hacking helps us identify warning signs that leaders are engaging in the practice.

How Performance Hacking Harms Great Companies

In the aftermath of last December's debacle at Southwest, the pilot union published a letter that contrasted two quotations.[2] The first was from Southwest's cofounder, Herb Kelleher, who is often credited with the uniquely successful business model and culture for which the company was known in its early days: "You put your employees first. If you truly treat your employees that way, they will treat your customers well, your customers will come back, and that's what makes your shareholders happy. So there's no constituency at war with any other constituency. Ultimately, it's shareholder value that you're producing."[3]

Gary Kelly, the company's CEO from 2004 until 2022, was quoted espousing a different philosophy: "Arguably, our shareholders have suffered for a long time when it comes to getting a return and our employees have been very well taken care of." The pilot union blamed that shift to a greater focus on shareholders for more frequent and severe operational problems.

The stated intention to take better care of shareholders is a sign that performance-hacking leadership is ascendant, but ironically the evidence suggests that these practices are actually bad for shareholders in the long run. Cashing out vital competitive capabilities might briefly benefit a subset of shareholders, but it destroys long-term value and prospects for other shareholders and stakeholders.

The corporate leader who arguably made performance hacking a mainstream management practice was Jack Welch, General Electric's CEO from 1981-2001. By the 1990s, he had perfected ways to manage earnings per share (EPS), using tweaks and tricks to yield a smoothly rising trend that was implausibly regular, always just beating projections. *The Economist* called it "taking money from one pocket and putting it in another."[4] After Welch's retirement, GE paid $50 million to settle

allegations of accounting fraud by the U.S. Securities and Exchange Commission.[5]

Today, many commentators trace GE's subsequent collapse — its stock plunge in the late 2010s, its removal from the Dow Jones Industrial Average after years of being named America's Most Admired Company by *Fortune* magazine, and its breakup into three smaller companies — to Welch's focus on appearance management and what insiders called the "success theater" of his successor, Jeffrey Immelt. But these practices had wider implications: GE's ability to deliver such unwaveringly positive results, however unrealistic this was for a complex conglomerate, led investors to expect it from other companies as well. Today's CEOs still feel this pressure.

Boeing's safety troubles with the 737 Max airliner, two of which suffered fatal crashes that killed a total of 346 people, can also be traced back to a deliberate decision to supposedly prioritize shareholder interests.

From 1998 to 2000, Boeing's leaders, many of them former Welch-era GE executives who came on board through Boeing's 1997 merger with McDonnell Douglas, became fixated on polishing a financial ratio called return on net assets (RONA). To accomplish this, they expanded outsourcing, slashed R&D investment, and laid off almost 20% of the workforce. The new philosophy at Boeing called for avoiding what leadership described as "moonshot" investments — a focus on developing the kinds of major new platforms and technologies that had made Boeing the unrivaled industry leader over the previous 80 years but involved placing big bets with uncertain outcomes. The decision in 2010 to squeeze more value out of the 50-year-old 737 airframe instead of building an all-new airplane was a direct result of this new way of thinking. But putting new, larger engines on the old airframe and positioning them differently than in the past required additional software to compensate for changes in handling, which contributed significantly to the Max's crashes.

Despite the misalignment we see in hindsight between performance hacking and protecting shareholder value, there are indicators that performance-hacking habits are spreading. Lately, large tech companies seem to be falling over one another to lay off employees, something they have historically not done at the current scale. Meta has cut 25% of its workforce over the last year. Salesforce has cut 10%; Amazon, 8%; and Alphabet, 6%, among

The Performance Hacking Toolkit

Business leaders, managers, and board members should be aware of these common methods of performance hacking so that they are prepared to intervene and prevent long-term damage.

Liquidating non-balance-sheet assets. Know-how that resides with employees is an invisible asset in the sense that it is valuable to the company but doesn't appear on the balance sheet. Similarly, a fully depreciated physical asset (a piece of equipment — say, a mainframe computer system) has value even though it no longer appears on the balance sheet. What is tempting to leaders about such assets is that they can be used to generate earnings without any corresponding balance sheet entry. As if by magic, laying off workers, outsourcing, or selling a fully depreciated asset can seem to produce earnings from thin air, without any telltale reduction of on-the-books assets. Wise leaders never forget, though, that unaccounted value is still real value for the company that, once gone, is difficult to get back.

Time-shifting cash flows and accounting assumption shifts. Boeing's technique of shifting cash flows to manage appearances was described by an anonymous employee in a 2019 *Seattle Times* article: "If the defense side falls short of expectations by hundreds of millions of dollars in a quarter, the call goes out from its Chicago headquarters to the Puget Sound-based Boeing Commercial Airplanes unit with a specific target to close the cash-flow gap: Negotiate with airlines and suppliers to pull money forward, say from January into December, and delay outgoing payments the opposite way. ... [It happens] 'pretty much every quarter,' said the insider. ... 'Everyone realizes it's not a good decision long term.'"[i] The financial terms of these deals are private, kept between buyer and sellers, so outsiders are none the wiser when they happen.

Changing accounting assumptions can also change financial results, without shifting cash flows. In 2016, GE's power division was having trouble hitting its earnings targets. It approached customers with new, sweet deals on upgraded equipment and coupled them with extensions on the terms of service contracts, some of them out to 2050 or beyond. The new sales provided an opportunity to shift the assumptions that determined how much

others.[6] These are highly profitable companies with favorable opportunities for further growth in their futures.

These layoffs could be warranted, as company announcements have explained, by a need to adjust the workforce to evolving competitive challenges, or to correct for having possibly overhired during the pandemic.

But they could also be gestures aimed at short-term investors. Amid Alphabet's layoffs, a major hedge fund investor publicly demanded more, seeking a 20% workforce reduction and the shutdown of some advanced R&D projects.[7] Layoffs have indeed been accompanied by such project cancellations, including some from the company's famed X division specifically commissioned to work on moonshots.[8]

In recent years, tech companies have also embraced another favorite tool of performance hackers, with rising enthusiasm: the stock buyback. It's a great tool for generating misleading EPS trends; for example, by operating on the denominator of the EPS ratio, stock buybacks enable the interesting trick of increasing EPS while earnings decrease. Such tactics have historically been employed by companies in mature markets whose leaders may be tempted to mislead because they have trouble generating growth. Tech companies, in contrast, appear to have ample growth prospects. Nevertheless, in 2021 and 2022, Alphabet, Apple, Meta, and Microsoft collectively announced almost $300 billion in stock buybacks.

Performance Hacking Indicators

Discouraging performance hacking begins with recognizing when it's happening. Signs are often apparent to insiders: As early as 2016, Southwest pilots called for Kelly's resignation after a computer system failure, citing his "misguided emphasis on cost controls" and spending cash on stock buybacks rather than investing in technology improvements.[9] Because any individual decision can have a legitimate business rationale, detecting the practice is less about spotting a smoking gun than watching for an accumulation of decisions and actions that add up to a likelihood that leaders have succumbed to temptation. Here are some of the indicators.

Sudden, unexplained improvements in performance ratios or key results, or trends that seem unrealistically smooth. The EPS trends at GE were too smooth. The improvements in RONA at Boeing from 1998 to 2000 happened too fast to signal real operational

of future earnings could be counted in the current year and thus boosted 2016 earnings. The company is still saddled with these long-term bad deals.

Drawing down buffers. One of the most common ways for managers to hack financial performance/cash out invisible assets is to remove buffers — of inventory, production capacity, duplicate groups, or facilities — from their organizations by asserting that they are unnecessary "slack." Or they outsource those buffers to other organizations, often in distant locations. Those buffers, however, often serve an important purpose: to protect an organization from immediate disruption should it experience widespread disturbances in its competitive environment.

Stock buybacks. When a company uses its cash to purchase its own shares, earnings per share improve even if earnings don't actually change. If companies have extra cash but can't find a high-return way to invest it, buybacks can be a legitimate alternative to dividends as a means of returning value to a company's owners. But as Robert C. Pozen has explained, from 2014 to 2016, the amount spent on buybacks and dividends consistently exceeded the aggregated net income of companies in the S&P 500, which suggests that companies buy back stock instead of using cash to invest in available high-return projects.[ii] Pozen also noted that many borrow money to buy back shares. If this tactic resulted in long-term improvements in stock price, that might be a justification, but the evidence suggests that companies that spend more on buybacks actually underperform compared with other companies in the long run in terms of returns. Ironically, over the long term, the markets seem to interpret stock buybacks as a form of financial engineering that signals fundamental weakness.[iii]

Kicking risk down the road. In his 2011 annual letter to shareholders, Boeing's then-CEO, James McNerney, explained the company's decision to try to wring more profits out of the 737 rather than develop a new airplane: "With development costs and risks far below an all-new airplane ... we reduce our business risk substantially for the next decade."[iv] In retrospect, however, this claim seems absurd. The decision led to the need for a new software system that was implicated in the later crashes, so it did not reduce business risk but rather deferred and magnified it. What it probably also did was reduce short-term risk to the stock price. If we read closely, we see that this is what McNerney meant by "business risk" — not the risk of a plane not performing, but the risk of short-term stock devaluation due to the uncertainties inherent in a major investment in a new plane.

change in such a large company. We know now what was really being signaled: excellence being cashed out. Sound management requires investing in creating new capabilities — *building* excellence — which often worsens performance metrics, at least initially. Numbers and trends that only improve should therefore elicit suspicion, not celebration.

A degraded customer experience. Whether it's flight cancellations, reduced customer support, or lower-quality products, an overt shift toward maximizing shareholder value in the short term might involve "borrowing" that value from customers.

Sudden enthusiasm for outsourcing, or a shift to more transactional people management that downplays the importance of employee expertise. Scholars Gary Pisano and Willy Shih have convincingly argued that outsourcing production based on narrow financial criteria usually also outsources expertise critical to a company's capacity to innovate.[10] Leaders engaged in performance hacking often see employee contributions to a company's products and services as just another fungible resource, interchangeable with what can be easily obtained externally. They dismiss the notion that employees are reservoirs of unique competitive know-how who have been and can be invested in and developed over many years.

Decreased leadership emphasis on the operational characteristics of the business, and fewer leaders with industry expertise. While Southwest founder Kelleher was known for his hands-on involvement in operations, Kelly rose to a leadership position on the strength of his contributions as CFO. During his tenure, he appointed an executive with an accounting background as COO. Late-1990s leaders at Boeing urged employees to avoid getting "overly focused on the box" (the airplane) and to instead conceive of the company as a generic return-making business.[11] This type of perspective also tends to play down the importance of leaders' industry-specific expertise. Past research on short-termism has implicated the hiring of leaders with little domain expertise.[12] Under Kelly, Southwest board members' airline expertise decreased noticeably. Industry expertise on the board at Boeing also declined after its late-'90s transformation.

Abandoning "moonshot" development projects. Developing new competitive capabilities sometimes requires a company to place big bets. Risk inevitably accompanies such investments. And yet it is hard to imagine a company thriving in the long run if it doesn't do some of this — and, in industries where competition is very innovation-based, quite a lot of it. Past research on companies afflicted by short-termism points to tendencies to decentralize R&D and shift emphasis from "research" (which has a less obvious return) to "development" (which has a clearer sense of return).[13] When Boeing, the dominant commercial airline innovator at the time, turned away from moonshots, it started down a path to the loss of its industry-leading capabilities (and the 737 Max crashes). Some analysts now doubt whether the company, lately competing with the likes of SpaceX and Blue Origin for aerospace talent, has the ability to create an entirely new plane.[14] Might tech companies be edging toward a similar path?

The Role of the Board

As noted earlier, boards can be complicit in performance hacking. But at companies with strong, independent governance, boards of directors have a number of tools that allow them to encourage performance that benefits companies and their investors in the long term. They might rework executive compensation packages to incentivize long-term thinking rather than rewarding short-term share price performance. They might also use frameworks, such as the Balanced Scorecard, that offer a wider set of measures intended to better account for the creation and cashing out of capabilities.

However, we don't think this problem will be solved purely through the redesign of incentives. It's preferable that boards stay alert to the possibility of performance hacking; orchestrate ongoing conversations about the relationship between building and maintaining vital competitive capabilities and the movement of short-term financial metrics; and insert themselves into some key decisions that are routinely left to senior management (like decisions about stock buybacks, which, unlike decisions about dividends, are not legally required to involve the board).

Of course, it's critical — but hardly a given — that board members themselves take a long-term view, just as some shareholders themselves do. An example of this came in 2021 at ExxonMobil, when the hedge fund Engine No. 1 led a campaign to install, over management objections, three board members who explicitly embraced a philosophy of focusing on long-term value creation.[15] Working with management researchers and consultants at PwC, Engine No. 1 developed a "total value framework" that used multiple data sources to evaluate long-term risks and opportunities, with a goal of making it clear to everyone how actions that might look good in the short term could drag down value over time.

The harm caused by performance hacking goes beyond companies and their employees, customers, and investors, however. If the only way for the market to correct for performance hacking is to let companies

implode, the public at large can bear significant collateral damage. Measures for mitigating and containing risks might include establishing regulations like the Sarbanes-Oxley Act of 2002, ensuring accurate financial reporting, and requiring stress testing as in industries like banking.

Silicon Valley Bank's recent implosion came just a few years after it successfully lobbied against regulatory safeguards and ultimately resulted in the government having to bail out its depositors (a significant chunk of the American startup ecosystem) to avoid wider economic damage. Leaders intent on lobbying against regulations that seem onerous should keep in mind that those regulations might play an important function in curtailing performance-hacking practices.

The Risks of Inaction

Performance hacking is so destructive because it often involves irreversible decisions. Organizations made vulnerable through excessive outsourcing may find that they don't have the ability to bring production back in-house when they need it, for example. Companies can also progressively weaken themselves through a long series of less visible decisions. Each of them might conform to what are considered generally accepted management principles and appear to have little effect on current operations but could be weakening certain expertise or capabilities, discarding a potentially useful technology, or undermining employees' commitment to the company's success. When those capabilities, technologies, and commitments are needed in times of stress, managers may find that they've gone down a one-way street: It's much harder to replace such invisible assets than it is to cash them out.

The pandemic, the war in Europe, the attendant disruption of global supply chains, and rising inflation and interest rates vividly illustrate the kinds of sudden stresses that business leaders have had to deal with these past three years. They also provide stark examples of the bad things that can happen to those who become addicted to polishing financial metrics at the expense of their organizations' long-term resilience.

If a business leader like Welch could make performance hacking seem desirable, it should be possible for another high-profile leader (or a group of them) to make investing for the long term seem fashionable again. A strong CEO, backed by a highly respected board, can express their intention to invest for the long haul, even if the usual financial metrics might temporarily suffer. If that approach dissuades short-term investors, so much the better. This, of course, will not be easy. It will probably attract activist short-term shareholders and short sellers. But if an influential group of business leaders can prevail and demonstrate the success of this approach, other companies might follow.

One thing is certain: If this problem is left unfixed and continues to fester and hobble companies, we should resign ourselves to watching a parade of executives retire with lavish compensation packages, leaving behind hollowed-out businesses that are incapable of providing the products, services, and desirable jobs that are desperately needed. ■

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Opening Access to the Fast Track for Career Equity

Understanding employee circumstances that contribute to or block paths to promotion can help managers position women and people of color more equitably.

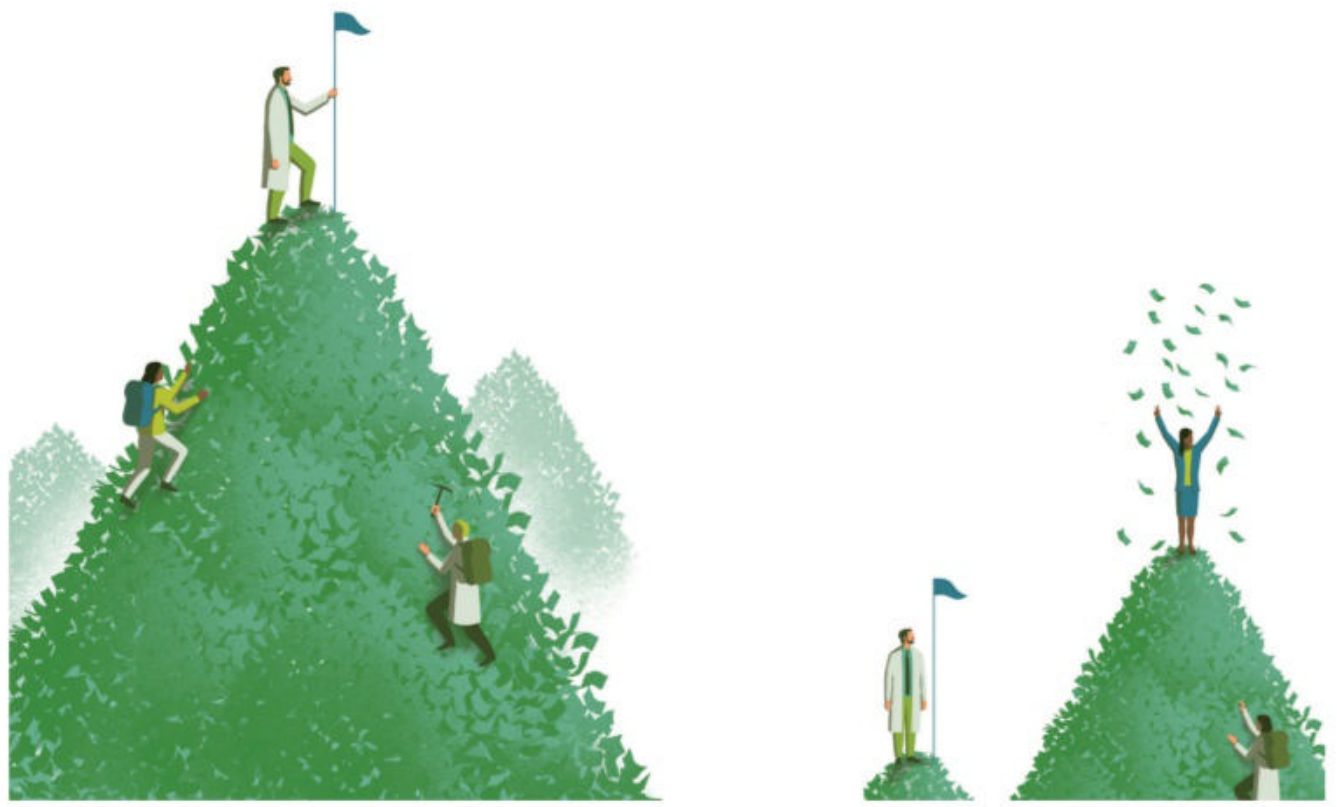
By Haig R. Nalbantian

BUSINESS LEADERS TEND TO FOCUS their diversity, equity, and inclusion (DEI) efforts on addressing bias and discrimination because these practices are pervasive and discrimination is illegal. But in the process, they overlook situational factors that play a leading role — and are easier to address — in determining whether women and people of color get promoted and are among the higher paid.

Career and pay equity are inextricably linked. Women and people of color continue to be underrepresented among managers and executives, and often among senior professionals as well.[1] While pay equity is improving for these demographic groups, the raw pay gaps (average and median differences between women and men, and between people of color and White employees) remain high in many companies. These pay gaps will persist until women and people of color occupy the career levels and roles that command the highest pay at a rate that reasonably reflects their representation in the workforce.

Inequity not only hurts individual employees; it also deprives businesses of the talent that is overlooked. If leaders understand how situational factors affect their employees' prospects for advancement, they can apply *proactive career management (PCM)* — identifying and removing barriers to employee success — to make their workplaces more equitable and more productive.

To better understand the factors underlying these differences in career outcomes, I examined the results of analyses of multiple years of promotion, retention, performance, and pay data in 20 large and midsize companies that collectively employed more than 700,000 people. The findings confirmed that significant gender and racial differences in promotion probability for women and people of color are attributable to four factors that are consistently consequential to employees' success: performance ratings, role assignments, reporting relationships, and flexible working arrangements.



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THE RESEARCH

- The author conducted the research underlying this article while coleading Mercer's Workforce Sciences Institute.[1]
- The author analyzed results of his research team's statistical analyses of three to five years of employee data for 20 large and midsize, mostly global, employers representing manufacturing and services companies in a range of industries, including consumer and industrial products, pharmaceuticals, technology, financial services, and professional services. Collectively, these companies employed over 700,000 people. About 40% of the employees were based in the United States.

With the exception of performance ratings, these factors are related to an employee's circumstances, not their knowledge, skills, or behavior. For instance, if career progress requires experience in certain roles but women are proportionally underrepresented in those roles relative to men, the net result is that fewer women will advance.

Certainly, bias and discrimination are also in play: In most of the organizations, we found large, unexplained gender and racial disparities in the likelihood of promotion that cannot be accounted for by any business-relevant factors. And we found universal and sizable racial disparities in performance evaluations, with people of color, particularly Black employees, less likely to receive high ratings. These are a logical focus for corporate diversity, equity, and inclusion efforts because they are evidence of bias or discrimination.

But because the explained differences often have the greatest influence on career advancement and pay equity, it's important to address them directly. The good news is that these factors are often the easiest to address successfully. Proactive career management is a data-driven approach that offers a solution that works.

Four Factors Drive Who Advances at Work

Let's look more closely at the four factors I identified that explain who receives promotions, high performance ratings, and larger pay increases at work and why women and people of color tend not to see those benefits.

Performance ratings. Because performance ratings affect all other outcomes, such as promotion, retention, and pay, disparities in this area have a cascading effect. In 89% of the companies studied, Black employees were less likely to receive high performance ratings. The differences can be sizable, with the majority at 25% or higher. Moreover, because performance ratings tend to persist from year to year — a high rating one year predicts the likelihood of a high rating the next — the tendency for people of color to get lower ratings becomes a virtual blockade to their progress. Interestingly, women are generally more likely to be highly rated than otherwise comparable men, but that doesn't translate into a higher probability of promotion for them.

Access to accelerator roles. In every company, certain roles are career accelerators and others are dead ends, regardless of who occupies them. In this study, having a supervisor role at any level almost universally improved the chance that an employee would be promoted and receive high ratings. However, we almost always found that women and people of color were far less likely to be in such roles than men or White employees, respectively.

The differences are often stark and steep. For example, in a global financial services company we studied, U.S.-based employees who were supervisors were 50% more likely to be promoted and 55% more likely to receive high performance ratings than those who were not supervisors. Outside the U.S., supervisors were 89% more likely to be promoted and 37% more likely to get high ratings. These effects were even larger for female supervisors than for male supervisors. But across the company, women were half as likely to be supervisors.[2]

Further, because women are more likely than men to face career disruption during their child-rearing years, they may take on supervisor roles later. In such cases, they don't experience the same compounding benefit of being in such roles as their male colleagues.

Reporting relationships. Whom one reports to can have a decisive impact on the trajectory of one's career. We generally found that people who reported to supervisors with high performance ratings were significantly more likely to receive a high rating as well. The probability that they would be promoted also increased.

We saw similar effects for employees whose managers were higher up in the corporate hierarchy than the norm for someone at their level and thus had more clout. To the extent that women and people of color are less likely to report to high-performing and higher-level supervisors, they are less likely to receive high ratings or promotions themselves.

They may also be less likely to benefit from these relationships when they do have them. At a global insurance company, those who reported to a top-rated supervisor were about 50% more likely to be promoted and 30% more likely to receive high performance ratings. Those whose supervisors were at a level higher than the norm were 9% more likely to be promoted and 14% more likely to be highly rated. However, having a high-performing or higher-ranked supervisor did not help women and people of color as much as it helped White men.

Flexible working. Increasingly, organizations view flexible work arrangements as essential to attracting and retaining talent, particularly women and younger employees. Since the COVID-19 pandemic, more companies and employees have embraced such arrangements, but historically, they have been career killers. For

example, those who work part time or remotely or take family leave are less likely to be promoted, are paid less, and are more likely to leave their companies.

At a business I'll refer to as ConsumerCo, opting for flexible work arrangements hurt both women and people of color. The percentage of women working part time was three times that of men; for people of color, it was two times that of White employees. Overall, working part time reduced promotion probability by 50% and the likelihood of receiving a high rating by 70%. It also increased turnover probability by 25% compared with similarly situated full-time workers.

Likewise, leaves of absence were disproportionately taken by women and people of color. Those on leave were about 50% less likely to be promoted or receive high ratings and much more likely to turn over — at least 150% more likely in the U.S. and at least 80% more likely globally.[3]

Unless companies do something to mitigate the negative consequences of flexible working on employees, the phenomenon of higher levels of flexible work arrangements risks further undermining career progress for women and people of color.

The Case for Proactive Career Management

With the exception of performance ratings, these drivers of career progress, or lack thereof, are situational. This is telling. It indicates that whether employees advance is not just a reflection of the talents and skills they bring or what they do, but also of how well their employers position them to succeed. All too often, women and people of color simply aren't positioned to succeed in the same way their White male counterparts are.

This is not to say that bias and discrimination are not factors, as mentioned above. However, employers can make measurable progress on DEI when they understand the extent of the positioning issues in their workforce and deal with them in a purposeful, systematic way. This is where PCM comes into play.

The idea behind proactive career management for DEI is simple: Identify and rank the factors that most influence career success and retention; if and where they skew significantly against certain demographic groups, intervene to eliminate or reduce the disparities. In other words, work to ensure that demographic characteristics bear no relationship to how well or poorly positioned an employee is to stay and succeed at work.

Every organization has talent flows that shape their workforce. Employers hire, train, and develop employees. And they value employees by giving them promotions, high ratings, raises, and other forms of compensation for the knowledge, capabilities, behavior, and experience they bring, the effort they deliver, and, ultimately, how they perform. Meanwhile, employees' decisions to stay or leave are influenced by whether their careers are progressing.

These talent flows and rewards define the internal labor market of an organization and produce the supply of people with the attributes needed to meet the demands of the business.[4] But as we have seen, different demographic groups within an organization do not have the same opportunities to acquire these attributes or be rewarded for them.

By not distributing opportunities equitably, companies effectively restrict their talent supplies. Women and people of color become more likely to leave or, if they stay, become less engaged because their careers are stalled. Knowing how the internal labor market functions

Mapping Women's Experiences to a Success Profile

A global consumer products retailer identified the 12 attributes that most strongly influenced whether an employee would be promoted. It found that in most cases, when women possessed any of these attributes, they were as likely to be helped by it as men were. However, women were less likely than men to possess 9 of the 12 attributes. (For reasons of confidentiality, discrete functions are identified only by letter.)

Traits Favorable to Promotion (in order of impact)	**Likelihood That Women Possess Trait Compared With Men**	**Relative Impact of Trait Compared With Men**
1. Being an expat	Lower	Similar
2. In Function M	Lower	Similar
3. In Function C	Higher	Similar
4. In Country A	Higher	Similar
5. In Bonus Plan F	Lower	Lower
6. In Function H	Higher	Similar
7. In Function S	Lower	Similar
8. Receives high rating	Lower	Similar
9. Supervisor receives high rating	Lower	Similar
10. Being a supervisor	Lower	Lower
11. Longer tenured	Lower	Higher
12. Reporting up	Lower	Similar

for different demographic groups within an organization is thus crucial for a company to execute its DEI strategy.

To implement PCM, organizations should start by creating a success profile that identifies and ranks the factors that drive who advances. From there, they can examine how each factor influences the probability that employees from different demographic groups get promoted and whether the organization is valuing their capabilities and efforts equitably.

Small organizations might rely on the four factors described in the previous section. For them, controlled, statistical analyses of their own internal labor market data are likely infeasible. Such organizations might complement the research with qualitative input about the keys to career progress from their leaders and employees who have successfully risen in the ranks there.

Large employers with complex organizations will be best served by developing an objective success profile based on empirical evidence that identifies and ranks the critical individual and situational factors that drive success in the organization. The natural place to start is with the factors that drive promotions. But organizations might examine other markers of success as well, like pay, ratings, and retention, to see how well the results align with those from the analysis of promotions.

After creating the profile, the next step is to examine how the profile plays out for different demographic groups. There are two questions to answer.

First, are the factors that most influence employee success distributed similarly across demographic groups, or do they tend to be concentrated more in some groups than in others? These are *quantity effects*, and they reflect the relative frequency of the factors across groups. For instance, are women and people of color as likely as men and White employees to have the prized characteristics or to work in circumstances associated with success?

Second, when people possess the prized characteristics or work in favored circumstances, do they benefit equally from those attributes, or do some demographic groups benefit more? These are *price effects*. They reflect whether the employer values the attribute, behavior, or situation in question differently for one group than for another.

Objectively answering these questions is the foundation of PCM, as illustrated in the case of ConsumerCo.

Positioning Employees for Success at ConsumerCo

ConsumerCo's leaders were committed to improving career and pay equity in both their salaried and frontline workforces.

The company recognized that having a diverse workforce was not a luxury or a concession to social good; it was essential to its success. With an increasingly diverse customer base and growth occurring mostly in markets outside the U.S. and Europe, having a leadership team and a workforce well attuned to the preferences and norms of local cultures was important to achieving growth targets.

HR and DEI leaders modeled their workforce data to uncover and assess the success profile for their salaried workforce. They identified 12 factors that were most likely to predict whether someone would be promoted. Situational factors dominated this success profile — a finding that stunned company leaders, who viewed the culture as a meritocracy. Of the top 12, only performance ratings and tenure were specific to the talents or accomplishments of an individual employee. The rest were purely circumstantial.

Being an expat (working outside one's home country) was the most positively influential factor. Reporting to a supervisor at a higher level than is typical had the least impact among the top 12 factors, but the effect was statistically significant.

Other factors included three of the four described earlier: having a high performance rating, being in a supervisory role, and reporting to a highly rated supervisor. In addition, working in certain functions or business lines mattered a lot to how one's career progressed.

Similar modeling showed that even the probability of receiving a high rating was inordinately influenced by situational factors. This finding suggested that performance ratings were not accurate measures of individuals' contributions.

When ConsumerCo's leaders mapped the success profile to women in the company, they found that when women were positioned in situations conducive to their future progress, they usually fared as well as men. But overall, they were less likely to be so positioned. (See "Mapping Women's Experiences to a Success Profile.") For instance, women who were expats were more likely to be promoted from those roles than otherwise comparable men, but women were less represented among the expat population.

Being a supervisor is also an important stepping stone to success at ConsumerCo, but the company learned that women were less represented in supervisor roles. When they did have those roles, it did not help their careers to the same extent as comparable men, for reasons that were not clear. ConsumerCo leaders could see that female employees faced a double whammy of sorts: Not only were they blocked from this accelerator role, but they also didn't get the same lift to their promotion prospects as their male colleagues when they did have that role.

Green Lights, Red Flags

A global consumer products retailer created a checklist of attributes that help or hurt employees' career progress. Managers use the checklist to identify whether women and people of color on their teams are well positioned to advance or might be at risk of stalling in their careers or leaving the organization. They can then take any steps needed to increase access to success drivers and mitigate unintended consequences. (For reasons of confidentiality, discrete functions are identified only by letter.)

GREEN LIGHTS
(ATTRIBUTES *FAVORABLE* TO SUCCESS)

Individual Attributes

- ❑ Receiving an "Exceptional" rating
- ❑ Being more tenured than comparable peers
- ❑ Receiving an "Exceeds" rating
- ❑ Being younger than comparable peers

Situational Attributes

- ❑ Being an expat
- ❑ Being a supervisor
- ❑ Being in function M, C, S, or H
- ❑ Being in bonus plan F or L
- ❑ Reporting to a higher-level supervisor
- ❑ Reporting to a top-rated supervisor

RED FLAGS
(ATTRIBUTES *UNFAVORABLE* TO SUCCESS)

Individual Attributes

- ❑ Having a longer time in grade than comparable peers
- ❑ Being part time
- ❑ Recently on leave
- ❑ Receiving a "medium" rating

Situational Attributes

- ❑ Working in distribution
- ❑ Working on the night shift
- ❑ Not in top brands
- ❑ Experienced a change in supervisor
- ❑ Reporting to a female supervisor
- ❑ Being on teams with more older colleagues (reduces promotion likelihood, but increases chances of getting top rating)
- ❑ Reporting to a supervisor with a larger number of direct reports

When the company looked at people of color, it found that they tended to be both less well positioned and less valued than White employees. ConsumerCo needed to change its internal labor market dynamics to achieve career and pay equity for women and people of color.

A Checklist for Change

Focusing on situational factors has a distinct advantage: They're easier to address than individual characteristics. For instance, although tenure is an important driver of success, it is a fact of people's employment history, not something that ConsumerCo could change overnight.

Still, ConsumerCo identified several areas where it could act reasonably quickly, such as changing reporting relationships for women and people of color, finding opportunities for them to gain more supervisory experience earlier in their careers, and addressing the disparities in performance ratings for people of color.

The company had found that taking a leave of absence thwarted career advancement, especially for women, and so it is also developing new leave and career development policies to address imbalances for that group.

Here's where the "proactive" part of PCM comes in.

The analysis of ConsumerCo's success profile made it possible to create a simple checklist of green lights (career advancers) and red flags (success blockers) that managers could use to evaluate the positioning of individual employees. By considering whether women and people of color on their teams were experiencing more green lights or red flags, line managers and supervisors could identify who was well positioned to stay and thrive, as well as who might be at risk of stalling in their career or leaving the organization. (See "Green Lights, Red Flags.")

Meanwhile, HR and DEI leaders used the analysis to evaluate at the aggregate level how employees from different demographic groups were positioned to succeed. For each factor, they could effectively evaluate the situational reality of different groups and tailor their interventions to address the most significant gaps.

For instance, they found that female, Black, and Hispanic employees were less likely to be reporting to highly rated supervisors, while Asian employees were more likely to have this advantage. And although women were less likely to be reporting to a manager one grade higher than usual, there were no such disparities for people of color. Also, while every non-White racial group was significantly underrepresented in one of the core functions that most contributed to advancement, women were more likely to work in that function than men.

ConsumerCo is in the early stages of rolling out interventions to address its disparities. But other companies I have worked with have pursued a variety of solutions.

Closing gaps due to flexible work arrangements often requires changing the culture. In many companies, part-time work is looked upon as evidence of lower commitment, and it can be difficult to shake these perceptions. However, companies can make quick progress on pay if

they stop factoring leaves of absence into the statistical models that they use to assess pay equity and adjust wages and salaries to close gaps.

Situation-based racial disparities in performance ratings have been reduced in some companies through the calibration process used to align ratings by different supervisors. Some have also eliminated forced rankings that provide for a very limited percentage of employees to receive top ratings. These tend to favor people with more tenure, whom supervisors have known longer, and presumably better — and who are more likely to be White.

Some clients have addressed the importance of supervisor roles by expanding training, both to reinforce the importance of these roles and to help supervisors understand the impact they have on employees' prospects. Leaders can offer training to help women and people of color gain the experience they need to advance — and close the gap between women and men in these positions.

Proactive Career Management Has Benefits and Risks

Because a success profile is built from an organization's data, it is more likely to reflect reality than the assumptions that leaders make about how employees succeed. Leaders may be prone to thinking that what got them to the top could get anyone else there as well, and they may oversimplify their own path. Further, people tend to generalize based on their own experiences, even if they don't represent the organizational norm.

A good empirical model can counter the tendency of people to engage in wishful thinking or to cling to belief. It can also account for the effects of being in different business lines, functions, geographies, and job families. This is something that's hard to do based on personal observation and experience alone.

Another value of PCM is that it is grounded in what creates value for the business. If, for instance, a role becomes critical to growth, one would expect the employer to accord more value to that role and the employees who successfully deliver value in it. And to the extent that an organization's DEI strategy helps ensure that high-potential women and people of color are able to access these newly valuable roles and perform them ably, it will serve the greater business need.

If there is a downside to PCM, it relates to the sharing of sensitive data and intelligence. PCM proceeds from objective modeling of the drivers of success and how they affect different groups. Invariably, the models will surface potentially damaging information about the existence of systemic gender or racial disparities in outcomes and opportunities, which creates legal risk.

PCM works best when managers understand the realities uncovered by the models and the reasons why specific actions are warranted. Thus, it requires a reasonable level of transparency. Corporate legal departments may, however, object to exposing what they may believe to be strong evidence of bias and inequity.

There's a delicate balance to be achieved. Most organizations I work with accomplish it by sharing high-level information with business and line leaders, and sometimes employee groups, about the reasons for particular actions while restricting the more granular data to a smaller group of top executives and HR and DEI leaders. Legal counsel almost always presides over such decisions; however, such advisers have become more understanding of the need for data-driven DEI strategies, appreciating that people can't solve problems they don't know about or understand.

THE UNEXPLAINED DISPARITIES IN CAREER opportunity and advancement at many organizations are important to address because they signal the potential influence of bias and discrimination. But doing so should not override attention to differences that can be explained by legitimate, business-relevant factors. The surest, most sustainable way to create career equity and equitable representation across all levels of an organization is to address the organization's career development practices (or lack thereof) that systemically impede the progress of women and people of color.

Of course, the work that employees do, their knowledge and skills, and how hard and effectively they work influence whether they will succeed. But success is also determined by how individuals are positioned to succeed — and organizations can do better at ensuring that all high-potential talent can gain experiences that will set them up for growth. ■

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The Unequal Rewards of Peer Support at Work

Research shows that men benefit more from supporting colleagues than do women.

By Nancy Baym and Constance Noonan Hadley

SUPPORTIVE RELATIONSHIPS WITH COLleagues are critical to job satisfaction, retention, and productivity — but with the dramatic shift to remote work over the past few years, those ties have weakened for many employees.[1] Our latest research suggests that as leaders focus on strengthening organizational culture and encouraging social ties, they should proceed with greater care and intentionality than they have in the past. The results of our investigation indicate that men may be earning a higher return on their social investments at work than women are.

Concerns about inequity in the way relationships are built and maintained in organizations are not new. Community-building and social support activities are rarely written into job descriptions or compensated, making them easy to overlook. Scholarship has previously highlighted the likelihood of gender bias in expectations and rewards for "organizational citizenship" and "emotional labor" behaviors at work.[2] For example, research found that women are more likely than men to be asked to engage in extra-role activities such as organizing a holiday party, and they are more likely to say yes when asked — often at a cost to their career progression and job satisfaction.[3]

We set out to investigate employees' experiences investing in — and their career benefits for providing — multiple forms of social support to coworkers. (See "The Research.") We conducted a survey in late 2020, a time when social support was especially important. We collected data from 836 U.S.-based office workers across a variety of roles, company sizes, and industries. In order to explore equity issues, we recruited a split sample, with 438 men (52%) and 398 women (48%).

What Kinds of Social Support Do Men and Women Offer?

Workplace social support can take many forms, and prior research has identified five types: emotional assistance, esteem reinforcement, social companionship, information or advice, and instrumental help (that is, providing tangible goods or services).[4] We identified 13 specific behaviors that fall into the support categories. In our survey, we asked participants to indicate which, if any, specific supportive behaviors they had engaged in on behalf of coworkers in the past month. This helped us see what employees were doing at a more granular level than standard high-level measures of social support allow.[5] Both men and women reported that they had provided four or five different types of social support in the

Stephanie Dalton Cowan / theispot.com

previous month, indicating an equivalent quantitative breadth.

However, there were clear gender differences in the qualitative aspects of social support. More women than men focused their efforts on listening, showing personal interest, and complimenting coworkers for their successes. (See "Gender Differences in Types of Social Support Behavior," p. 72.) Men reported offering career advice more frequently, as well as engaging in two of the least common types of support: helping a coworker fight an injustice, and organizing an online gaming meetup.

We grouped the behaviors by social support category. When we examined the data at the category level, we found that women reported providing more forms of emotional and esteem support, while men reported offering more forms of social companionship and slightly more instrumental support than women.

We also asked participants how often they provided *any* form of social support to colleagues, from less than once a month to several times a week. In addition, we asked how much these actions had increased or decreased since the start of the pandemic. Men reported a bigger increase in how often they supported others than did women, which suggests that the pandemic led them to step up their efforts; women, however, still reported offering support significantly more often than did men.

Differences in Return on (Social) Investment

Based on earlier research, we hypothesized that men and women might not experience recognition equally for being a supportive colleague at work. To test this, we created a measure of perceived organizational encouragement by asking whether employees were incentivized to help others at work and whether bonuses and promotions were tied to such behaviors. Men's overall rating of the level of encouragement and rewards for social support available at work was 11% higher than women's. Thus, the women in our study reported a higher level of investment (frequency of providing social support) than men but a lower potential return (organizational rewards and recognition). These findings indicate a lower *social ROI* for women.

This gender inequity is cause for concern, especially as women continue to display higher levels of occupational stress, as well as a greater willingness to leave jobs and switch employers.[6] In separate regression analyses, we found that the single biggest predictor of job satisfaction in our sample — whether the respondent was male or female — was how much they felt their organization recognized and valued the social support they provided to others at work. The gender differences in social ROI may help explain why the men we surveyed were 12% more satisfied with their jobs than the women were.

Concerns about inequity in social ROI extend to other demographic characteristics as well. Previous research, for example, has found that the emotional work done by people of color and underrepresented minorities is often underappreciated.[7] While our sample distribution did not allow for detailed analyses by racial subgroup, we did see some indications of difference. For example, Black men rated their work environments as less rewarding for acts of social support than White men did (but both groups of men still rated them higher than White or Black women did).

Why Are Men Rewarded Differently From Women?

To be clear, our study design allows us to identify only correlation, not causation. However, based on our findings and those of other researchers, we believe there are at least two likely explanations for the gender discrepancies we identified in social ROI. The first is that the overall investment made by women may be less noticeable. The second is that the types of investments made by women may be valued differently from those made by men.

When women nurture others as part of their

THE RESEARCH

- To examine patterns in social support and relationship-building during the pandemic, the first author conducted a survey of American office workers in late 2020.
- For the analysis, the authors compared the results of the 836 respondents who self-identified as male (n=438) or female (n=398) in gender. Distribution of the sample by race includes those identifying as White (50%); Black or African American (22%); Asian (16%); Hispanic or Latinx (6%); Native American, Alaska Native, or Pacific Islander (2%); multiple races or ethnicities (2%); and other/unidentified (1%).
- Respondents represented more than 15 industries in companies of varying sizes. A total of 61% of the respondents were managers, and 39% were individual contributors. At the time of data collection, 44% were working full time in a company location, 39% were working full time remotely, and 17% were working a mix of onsite and remote (hybrid).
- The findings were verified by statistical analyses, including bivariate correlations, means comparisons and regressions. Major findings reflect a two-tailed significance level of $p<.05$ or below.

professional performance, it is often naturalized because such behavior conforms to cultural stereotypes for women.[8] Those same nurturing behaviors might be overvalued when men perform them because they are less expected of men.[9] Thus, discrepancies in the ROI between men and women may be due to inequitable approaches to detection (not seeing women's efforts as clearly as men's) and valuation (overcompensating men for lower relative contributions).

Moreover, the types of support most commonly provided by women may be less valued in the implicit ways that organizations assess performance. For example, we see in our data that women are more likely to go out of their way to welcome a new colleague, whereas men are more likely to provide career advice. Which behavior counts more? In some workplaces, instrumental forms of support may be viewed as more useful than other forms.[10] If so, the discrepancies in ROI for women and men found in our study may be attributable to assigning greater value to behaviors that male colleagues are more likely to undertake.

What Managers Can Do

Leaders are searching for ways to strengthen the social integration of their organizations in the aftermath of the pandemic and ongoing remote and hybrid work arrangements.[11] Simultaneously, the retention of women and racial and ethnic minority employees is a top issue.[12] To build both a more supportive peer culture and improve equity, we suggest managers take the following actions.

Provide clarity about which behaviors count. Organizations must clarify which everyday employee behaviors they want to encourage and how they will be valued. For inspiration, they might consult the list of behaviors used in our study. But they shouldn't stop there. It is critical to get input from a wide variety of employees to determine what types of support *should* be weighted highly in the eyes of organizational leaders. A good start would be conducting a companywide survey to learn what kinds of support people want in their work contexts and determine the extent to which they are currently receiving such support.

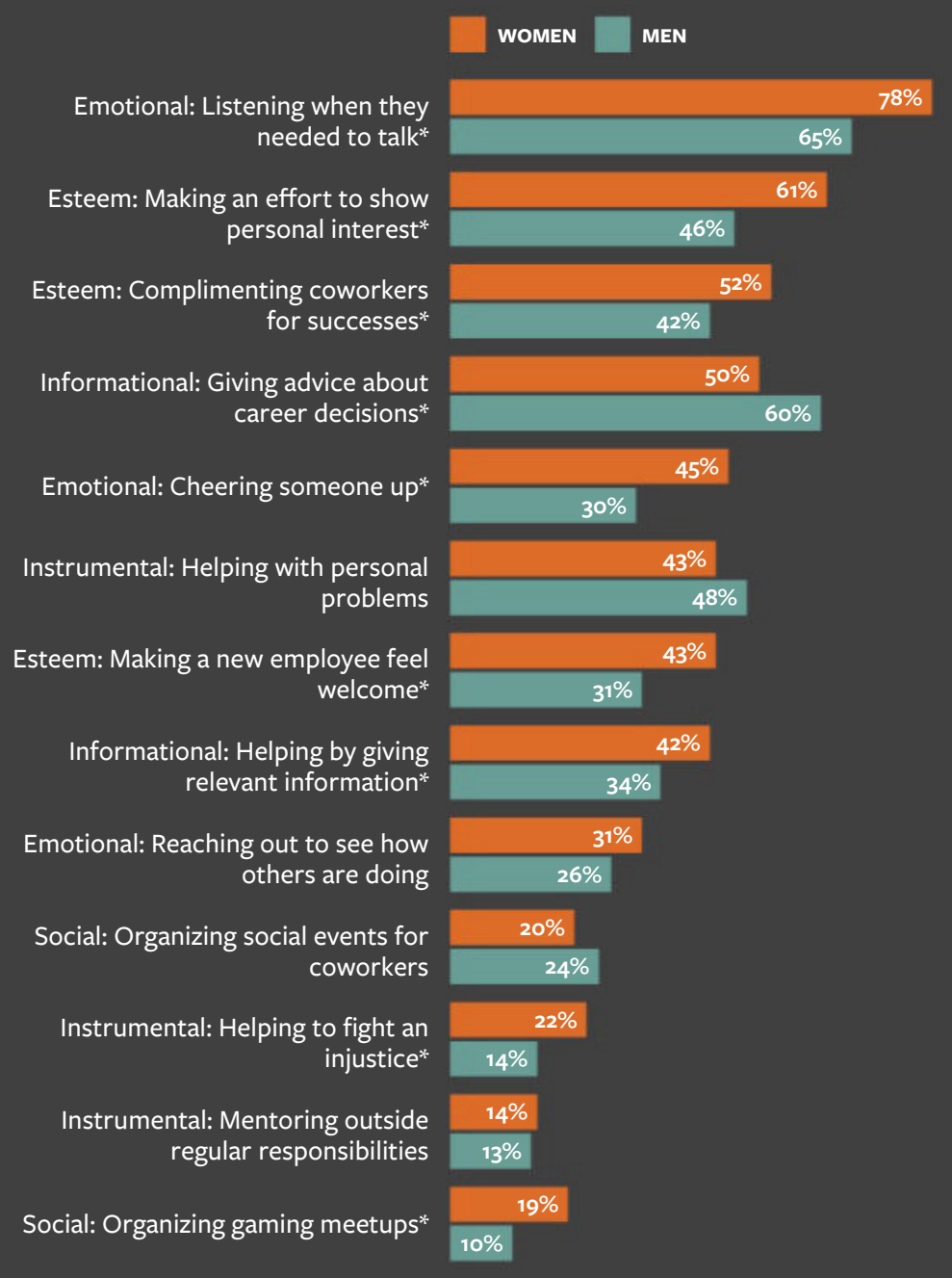
As companies gain clarity about what is worthy of reward, we sound a note of caution about incentivizing quantity over quality. Research has shown that providing help when asked, rather than proactively, tends to generate the most gratitude.[13] Along with clarifying target behaviors, employers should prioritize offering support in a manner imbued with mutual respect, psychological safety, and humility.[14]

Make the invisible visible. To address concerns about inequitable rewards for supportive behavior, it is critical to make the invisible more visible. In one-on-one meetings, for example, managers might ask who, if anyone, has been particularly supportive to that employee and how. Or, as part of team after-action reviews, members might be asked to identify times when a teammate provided a form of support that moved them or a project forward.

Note that even when you make this effort to bring support into the light, it might still be harder to see the

Gender Differences in Types of Support Behavior

Social support behaviors can be grouped into five categories: emotional, esteem, social companionship, informational, and instrumental. Women are more likely to support a variety of types of emotional and esteem support, while men are more likely to provide career advice and instrumental types of support.



*Signifies a statistically significant difference ($p<.05$, two-tailed t-test).

contributions of some groups of employees. Making the invisible visible will require training yourself and others to identify and reduce implicit bias in how you view the actions of others.

Provide training and education. Learning opportunities can help break old habits and promote new ones. It can be helpful to start with instruction on how to listen effectively. Many people lack this crucial communication skill, and research shows that in addition to being supportive on its own, good listening underlies the most effective delivery of social support.[15] Activities that foster learning from those with different experiences can also be helpful. Role-playing exercises exploring different forms of social support may help people better understand the distinct value of each.

Revise performance management systems. If organizations want to distribute the production of social support fairly across the organization, they should embed metrics for those behaviors in their performance management systems.[16] For example, those who go above and beyond expectations to support colleagues may receive bonuses, and their behaviors should be considered key criteria for advancement. Providing social support can be viewed as a shared responsibility to which all members must contribute.[17]

Though we have focused on rewards for supportive behavior, an important flip side is disincentivizing unsupportive acts among colleagues. It doesn't take much bad behavior to undermine the relational culture of a whole team or organization.[18] Just as those who support the needs of others should be rewarded, those who undermine or disparage colleagues should receive managerial intervention and correction.

ORGANIZATIONS ARE SEEKING WAYS TO better retain women and members of underrepresented groups, reduce the isolation associated with remote and hybrid work, and bolster job engagement and satisfaction. To do so most effectively, they should reexamine how they define, encourage, identify, and reward socially supportive behaviors at work. Every employee deserves a high return for investing effort in their workforce community, regardless of their demographic characteristics. ■

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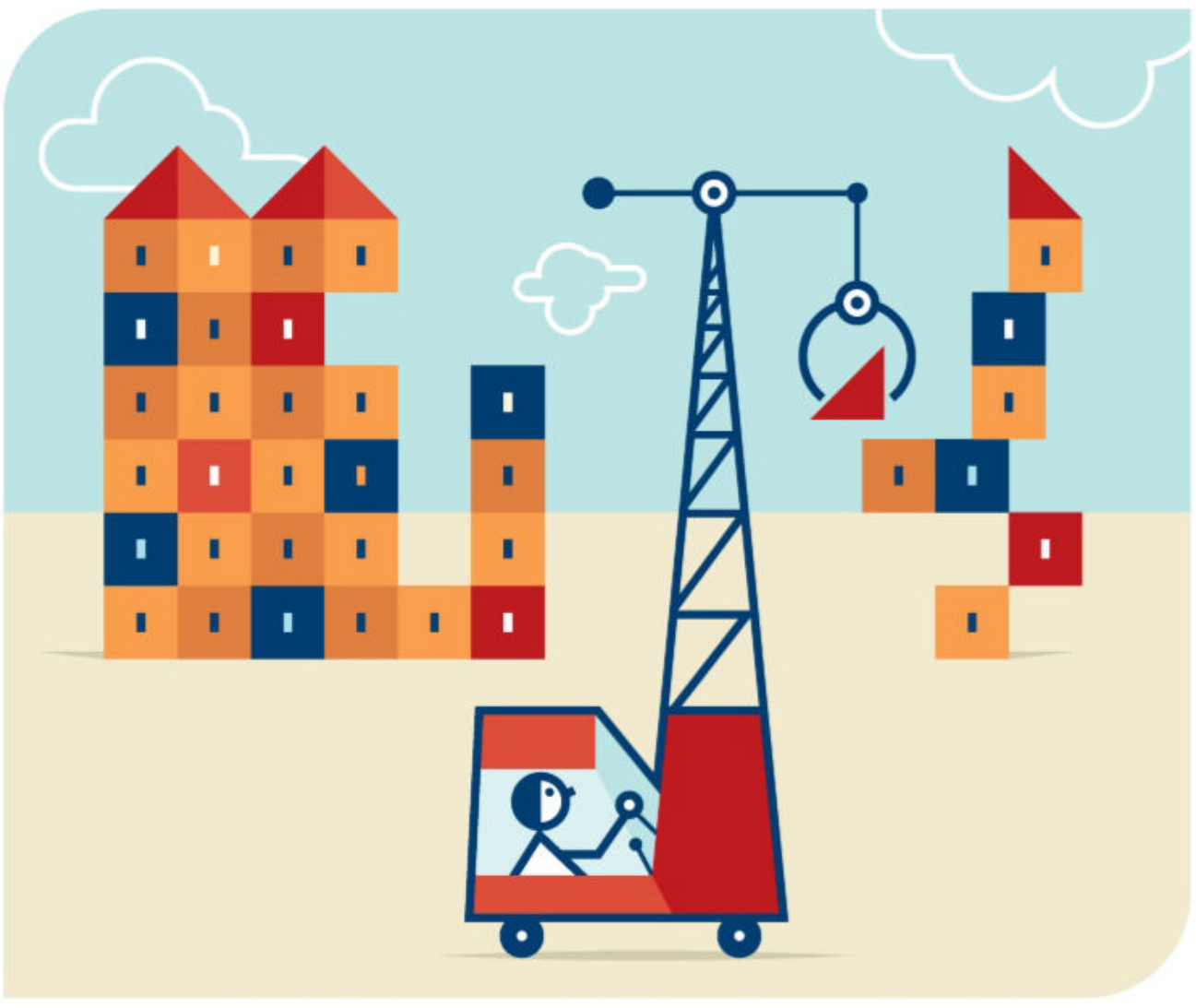
Moving Beyond Islands of Experimentation to AI Everywhere

The agile teams needed to kick-start artificial intelligence must give way to companywide structures in order to scale the technology across a business.

By Amit Joshi, Ivy Buche, and Miguel Paredes Sadler

COMPANIES IN A WIDE RANGE OF sectors are making significant investments in AI — and are increasingly concerned with how to scale use of the technology to gain benefits from it across their organizations. Too many companies stall out on their AI journey and have difficulty getting past pilot projects or point solutions. That's not necessarily because the technology is so complex. Our research finds that companies fail to extract the potential business value from AI not for lack of technical expertise but rather due to structural and process issues.

We took an in-depth look at the AI scaling journey of 10 market-leading legacy companies with three to eight years of AI implementation experience across diverse industries, including consumer packaged goods, pharmaceuticals, banking, insurance, security services, and automotive. These companies were at different stages of progress, ranging from relatively nascent capabilities to extremely sophisticated. How they organized their efforts at each stage had implications for what they were able to accomplish. We found that AI projects in enterprises generally begin as what we call *islands of experimentation* (IOE) before coming together around a corporate *center of excellence* (COE). Only a small number then move to a sophisticated *federation of expertise* (FOE) model built on a centralized base of knowledge, systems, processes, and tools, and on decentralized embedded capabilities.



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This implies that enterprises with AI ambitions may need to make two potential leaps. Below, we explain why each leap is necessary and discuss how companies can facilitate them.

The Limits of Experimentation

AI initiatives often begin with small, specialized teams exploring specific problems, but these decentralized IOEs make a limited impact. For example, a global pharmaceutical company in our study developed a machine learning tool to predict the next best action for its sales force. Although this tool was successfully launched in one country, it did not spread further because of the company's highly decentralized structure. Attempts to launch the tool in another country where it would have benefited the company's operations failed. Eventually, the company realized that the tool was not used widely enough to generate sufficient ROI on the project, and the initiative was killed.

IOEs typically fail to scale as a result of the following four limitations:

- IOEs are usually trained on curated niche data to solve a specific problem, which by its very nature hinders broad usage.
- The limited number and availability of curated data sets means they are eventually depleted (a supporting data architecture for new data sets is typically absent in the initial phase), and projects grind to a halt, even in narrow settings.
- These AI projects are neither visible nor accessible across the enterprise, resulting in duplication of effort, inefficiencies, and higher costs.
- Resource constraints restrict progress over time. Consequently, once the "low-hanging" problems are solved, these islands tend to stagnate or sometimes disappear altogether.

Scaling up from disparate IOEs to build a strong COE is essential in order to create enterprisewide value. IOEs typically focus on tactical initiatives that may generate quick wins but are not necessarily aligned with the company's strategic objectives. The COE enables a fundamental shift in the type of AI deliverables: They become strategic for achieving key business objectives.

Making the leap from IOE to COE allowed Rímac, the largest insurance company in Peru, to scale up its ad hoc AI experiments aimed at managing churn and understanding customers' propensity to buy existing products (life, health, and vehicle insurance). The COE was established in 2019 along with a new role, chief AI and data officer, that reports directly to the CEO and sits on the executive committee. Those moves sent a strong signal about the importance of AI, analytics, and data to the rest of the organization.

IOEs' tactical initiatives may generate quick wins but are not necessarily aligned with the strategic objectives.

The chief AI and data officer introduced AI and analytics as an agenda item at C-level strategy meetings and convinced organizational leaders that the company's data was a strategic asset. The executive gained a budget to fund strategic AI and data initiatives, influenced business units (BUs) to experiment with innovative AI models, and established data governance principles and processes in partnership with IT. The COE went on to create completely new value propositions, such as a digital pharmacy, well-being services, and chronic disease prediction and management, which aligned with the company's strategic entry into well-being as a new, adjacent business in 2022.

A COE is also essential for companies seeking to address problems that are challenging and complex and have a potentially high value. Done well, the COE can eventually become a source of competitive advantage, as was the case at Securitas, a global security services company. After Securitas established an advanced analytics COE in 2018, the COE team chose to work on the tough problem of risk prediction. The team built on internal data (both free text and historical reports that yielded data on incident occurrence, timing, location, type of client) and external data (such as weather, demographics, and street maps). The AI model was then trained to predict the risk of an incident (burglary, vandalism, or even assault) and where and when it might occur, with 88% precision.

The prediction provided input to clients so they could better schedule guards and patrols, thus enabling them to tackle dynamic risk. For example, the model alerted a Swedish retailer with over 90 outlets as to which of its sites were the most exposed, the biggest risks at each site, and the factors driving those risks. This informed critical actions to significantly improve security for the retailer. Cracking the risk-prediction problem wouldn't have been possible without a centralized approach that enabled Securitas to acquire the volume and variety of data needed and the more specialized AI experts required to staff a COE, according to then-CIO Martin Althén. Risk prediction delivered through an app soon became a competitive differentiator for Securitas.

Focus on Standardization to Deliver at Scale

IOEs are almost by definition opportunistic and agile. Their key goals are speed and "good enough" solutions to the pressing needs of a BU or function. Consequently, IOEs are where proofs of concept are generated, bridging the adoption chasm between early adopters and the rest of an organization. But they also lead to inefficiencies due to the lack of standardized data and AI infrastructure, narrow data availability and capabilities, and the absence of mechanisms for sharing results and best practices.

Through the use of COEs, companies are able to shift the emphasis of AI applications from quick wins/proofs of concept to the rapid delivery of reliable business-focused AI solutions at scale. They do this by creating hardwired processes and standardized systems that can efficiently produce and deploy models. Additionally, the COE drives appropriate model governance to help the organization achieve a granular level of control and visibility into how AI models operate in production.

Standardized processes and a shared data and analytics architecture are crucial to bringing together all parties: users at the BU level who will benefit from the models' insights/predictions, data engineers in IT, AI model developers, and the machine learning operations (MLOps) staff who will put the technology into production.

At a large U.S. grocery group, this began with formalizing the chain of command for implementing AI efforts: identifying who was the decision maker, who was responsible, who could intervene, and who would pay. The company decided that BUs would be the owners of the AI projects, after it emerged that they were far more successful at influencing IT to deliver needed improvements than AI and analytics leaders had been. The company then set standard expectations for response times and service levels for data scientists, MLOps, and IT related to building and productizing models and creating the data pipelines to put models into production.

Locate COEs Where They Best Serve Current Objectives

The structural placement of the COE within the organization depends on the maturity, decision-making processes, and corporate dynamics of the enterprise. The COE can remain as a stand-alone cost center that is either fully funded by the corporate headquarters or cofunded by all BUs. Alternatively, it can operate under IT as a separate unit with clear boundaries, or under a dominant BU or key function such as marketing.

For example, the COE at Securitas was set up as a stand-alone unit working with agile operating principles and open-source technologies — not the norm in the company's legacy IT function. Later, it became part of the Securitas BU focused on digital security solutions. In contrast, Philip Morris International's COE has stayed within the IT function to maintain

Center of Excellence (COE) Do's and Don'ts

DO create systems in the COE to identify and fix biases.

DO NOT let the BUs develop "not invented here" syndrome.

DO contain the intellectual impatience of the COE experts.

DO NOT depend on the COE for problem generation; instead, originate questions in the BU.

DO quickly build credibility and trust in the COE.

DO NOT lose sight of the multiyear horizon in planning.

Aligning incentives and sharing risk between the COE and the BU is fundamental to scaling AI.

easy access to data while avoiding the complexity of creating a new global unit; and financial services company Rabobank established a COE to accelerate the data and analytics transformation of the company's international food and agribusiness unit.

These examples show that the COE is best placed under whichever role or division can facilitate execution — and thus capture value. Each of the alternatives offers varying degrees of autonomy, accountability, and collaborative potential. COEs that are truly autonomous can approach any part of the business with agency and empowerment to create value. The structure might also evolve to match the company's strategic direction. We see this at Rímac. Although the advanced analytics COE started as a stand-alone entity reporting to the chief AI and data officer, after three years it was brought under the marketing function to enable a customer-oriented transformation around well-being services in the next strategy cycle.

Address the Incentives-KPIs Mismatch

Aligning incentives and sharing risk between the COE and the BU is fundamental to scaling AI. Since the COE does not operate in a vacuum, setting KPIs *only* for the COE gives it responsibility without power — and then it becomes even easier for skeptical BUs to claim that the COE is not generating value.

At Rímac, the COE's objective was to increase gross profits by $15 million in a year. However, the BU with which this value was to be created did not have this objective on its scorecard, so it did not necessarily prioritize the resources, bandwidth, and effort needed to implement the AI models (or help to create them). Needless to say, the COE could not fully achieve these targets.

To rectify the situation, in 2022 the company moved to a shared-objectives scheme whereby the BUs had their corresponding share of value objectives and key results; this ensured appropriate effort and resource allocation. Also, proper accounting for the value-add was essential to establish a measurable KPI, thus enabling the correct ROI estimation for AI efforts. A senior executive there explained, "If the business head knows that his P&L or budget is being charged with US$500,000 a year to cover costs but the COE is generating US$5 million in operating revenue, it's a no-brainer that the motivations on both sides will match."

When the COE Is Not Enough

While COEs have been successful mechanisms used by many companies to gain more value from their AI capabilities, they can be insufficient for large, highly diversified companies with significant resources at their disposal. For those organizations, one of the drawbacks of the COE is that it lacks the domain knowledge about specific business areas. In one conglomerate we studied, the COE created a spend prediction and customer upgrade model for its hospitality business. The model provided insights to allow front-line employees to offer customers with certain profiles better rooms, spa packages, entertainment options, and other upgrades.

Although the model worked well from a technical point of view, the implementation failed because it simply could not be inserted into the staff's existing decision-making and work processes. The COE head shared, "We knew we could do a lot of cool stuff; we also had the sponsorship of the hotel's CEO, but we didn't really understand the business. Our lack of knowledge didn't allow us to ask good questions or incorporate the right features into the models. We then realized that in order to be successful, our data scientists needed to become specialists in domains like hospitality, mining, fisheries, etc., and not be generalists at the corporate level."

Second, with growing success and credibility, COEs tend to become a bottleneck. A telltale sign is when the COE goes from knocking on BU doors to find analytics projects to having a backlog of multiple BU projects vying for priority. As BUs end up queuing for access to stretched COE resources, a slowdown in scaling momentum ensues, which ultimately creates frustration on both sides. In these situations, companies may turn to a federation-of-expertise model.

The FOE model comprises two elements: a centralized base of knowledge, systems, processes, and tools; and decentralized embedded capabilities. Each BU pays for the embedded specialists (MLOps and development and operations personnel), and the team size depends on the profile and objectives of the business. The tech team focuses on building BU-specific analytical solutions and a catalog of

algorithms and processes that can be used for data discovery, model monitoring, maintenance, retraining, and so on. Accountability is often achieved through a dual reporting line — to the BU head and to the CIO/functional leader — with joint business reviews to agree on the priorities.

At Procter & Gamble (P&G), the corporate center provides the central platform — for example, Microsoft Azure and a central data lake — and the BU builds the products on top of it. The embedded teams extract data from this system to create data hubs (which are further loaded with additional internal and external data sources) and build solutions that correspond to the needs of a specific BU.

The FOE structure enables the central team to have a bird's-eye view so it can identify situations where a particular local solution could have multiple applications. The embedded team also has the autonomy to incubate bottom-up ideas that have the potential to be reapplied enterprisewide. P&G deftly manages this balance between autonomy and control by leveraging a data science sandbox to create a BU-specific solution, testing it, and then replicating it in other units. For example, audience modeling, a highly valuable use case for digital marketing, does not need to be rebuilt unit by unit.

However, a danger with FOEs is that practices and tools can fragment across the company. When Rímac transitioned to a hub-and-spoke federated model, its health insurance BU proceeded to embed specialist capabilities by allocating a budget, pulling in some central experts, and recruiting new talent to speed up the process. Rímac avoided fragmentation by giving the COE head and three senior project leads responsibility for ongoing dialogue with the BU head and having them participate in management meetings to understand the business needs. It also trained the newly embedded talents on best practices and lessons learned from past mistakes and set guardrails to ensure consistency.

A key benefit of scaling up to the FOE model is that it drives a flywheel effect. Prioritization can be based on cumulative value: A project might not deliver significant benefits in the first round but could generate important data sets or tools that could be reused for multiple use cases in the future. As Harrie Schaap, Rabobank's data and analytics transformation lead, explained, "It is no longer just about the monetary value or the ease of implementation. The bigger question is, by pursuing this use case, are we actually building a data position which will be a stepping stone to create substantial monetary value from the next use cases?" This effectively means advancing up the data science hierarchy, where executing one level unlocks greater potential at the next. As cost centers with shorter time horizons, COEs cannot assign priorities using the same logic.

More importantly, during tough times, the COE's funding might be threatened, stalling progress. However, this issue is avoided in the FOE model, since federated AI projects don't necessarily face the same cost-cutting pressures, so scale-up can continue.

COEs are generally cost centers, and BUs often push back on demands to fund a COE that they did not ask for in the first place. They may be skeptical about the new solutions proposed by the COE and doubt that they will generate sufficient value — at least initially. And they typically want to see ROI within the fiscal year, whereas some AI-related work might take multiple years to generate a positive return.

Transitioning from a COE to an FOE allows for a shift in the funding model — from a

Federation of Expertise (FOE) Do's and Don'ts

DO establish governance that balances gatekeeping and access.

DO NOT jump to the FOE model too quickly.

DO avoid status competition between the COE and business unit/function in terms of decision-making.

DO NOT underestimate the role of the "translator" between the BUs and COE.

DO refrain from a tug-of-war over resources; COEs will seek to minimize their involvement, but BUs will push for COEs' full involvement.

DO NOT drop the ball on prioritizing high-impact use cases enterprisewide.

Transitioning from a COE to an FOE allows for a shift in the funding model.

contribution-based system shouldered by the BUs to a dual funding model where the core team is funded by the corporate headquarters and each BU maintains its own data resources. This shift permits BUs to have greater control over both expenses and the ultimate outcomes.

Close the Feedback Loop

The strongest lever for scaling usage and adoption of artificial intelligence is to demonstrate that using AI tools has a positive financial impact on the business. It requires that the organization establish a feedback-loop flow from the BU to the MLOps team and, ultimately, to the data scientists. This helps ensure that the two most common problems in model building — applicability and model drift — are addressed.

Feedback from the business that, for example, an AI tool meant to improve lead generation is producing few conversions to customers enables the data analytics team to retrain the model with more labeled data and knowledge of the model predictions in the field. In fact, in some companies, central experts in the COE/FOE refuse to support BUs that don't provide feedback on their models.

Continuous feedback also allows for faster flagging of model drift — when the AI tool's own learning on the job changes its output in ways that make it less useful or even wrong. Mature companies carefully monitor performance measures such as model accuracy, error rates and types, drift in scores over time, and inferences from the model.

Process Change at Scale

The progression from solving particular problems to building new capabilities must ultimately result in work processes that are consistent across the organization. At Tetra Pak, a global leader in food processing and packaging solutions, the data science team identified a significant opportunity to optimize the safety stock for its base material (paper board) to minimize working capital while maintaining customer service levels. As the first step, it fine-tuned the stock forecasting formula using historical data on demand variability from customers and lead time variability from material suppliers. Successful pilots with the new formula enabled the team to build initial trust with the company's supply chain planners.

The second step was more complex. The team looked at historical forecasts to identify the biases that influenced forecast errors. These biases stemmed from sales incentives to increase growth and supply chain incentives to reduce the cost to serve. With this insight, the team created a machine learning model that would provide a baseline replenishment forecast at the beginning of the planning process, which the planners could then enrich with additional insights such as demand signals. This required a series of significant process changes: redefining the forecasting process, reframing the roles and responsibilities of planners, and introducing new mechanisms to measure forecast accuracy and minimize the total cost to serve.

These efforts resulted in a 25 million euro ($27 million) reduction in working capital in the short term and a scale-up opportunity of an additional 43 million euros by applying the same machine learning forecasting model to other components, such as straws and caps. More importantly, both the data science and operations teams started thinking more holistically about how AI could be embedded to optimize inventory for specific customers with different service-level agreements based on forecast accuracy. Only when the processes are fundamentally changed can a data-driven approach become a strategic game changer.

MANY ENTERPRISES ARE ON A JOURNEY TO gain broad value from data analytics and AI capabilities, but they are still far from the destination, often adrift among islands of experimentation. Instead, scaling AI requires two critical leaps that have less to do with the technology or resources and more to do with establishing appropriate organizational structures, operating processes, and metrics — and executing the changes with intentionality. While the past decade has been about experimenting with applying AI, the next decade will reward those organizations that really manage to scale it. ■

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Manage Your Workforce Ecosystem, Not Just Your Employees

Skillfully orchestrating a workforce that includes external workers and even technologies requires new organizational structures.

By Elizabeth J. Altman, David Kiron, Jeff Schwartz, and Robin Jones

Jon Krause / theispot.com

"HOW DO YOU DEFINE YOUR workforce?" We have posed this question to dozens of executives and in multiple global management surveys. The most common answer is also the most surprising.

A confident minority of executives say their workforce is just their employees. But the overwhelming majority, especially leaders on the front lines of organizational transformations, takes a broader view that goes beyond just employees. Increasingly, they characterize the workforce as all of the people and groups involved in achieving the company's business objectives. Organizations' extended workforces have become so essential to their businesses, brands, and approaches to value creation that they need to think differently about, and act differently toward, their entire workforce.

That represents a shift in management perspective since we began our study of the future of the workforce a few years ago. We are seeing this change across industries and a variety of organizations, large and small — and it is challenging leaders to redefine who and what constitutes their workforce and to develop new management practices and organizational structures.

Hierarchical, command-and-control, internally focused management practices are ill suited for workforces that span internal and external organizational boundaries. Using siloed functions to independently manage employees and external contributors, for example, is fraught with challenges: Ill-defined decision rights, governance processes,

and power dynamics can undermine even the most well-intentioned executives. In addition, the technology systems for managing employees are typically different and disconnected from those for accessing and tracking external contributors. This lack of integration creates inefficiencies that can thwart efforts to obtain and maintain strategically valuable capabilities.

We define *workforce ecosystem* as a structure that encompasses actors, from within the organization and beyond, working to create value for an organization. Within the ecosystem, actors work toward individual and collective goals with interdependencies and complementarities among the participants.

Workforce ecosystems include employees as well as external contributors and partners of various kinds — long- and short-term contractors, gig workers, application developers, service providers, and crowdsourced actors. An ecosystem perspective explicitly recognizes that accessing and engaging workforces is no longer the sole purview of the human resources function but requires cross-functional actions involving leaders in the C-suite, IT, procurement, finance, legal, and other areas.

Intentionally orchestrating a workforce ecosystem requires leaders to coordinate activities across their own organization and with external contributors. To meet this challenge, companies need to reassess coordination between functions such as human resources, procurement, and IT. Decisions also need to made about how to govern relationships with external contributors, such as application developers and subcontractors. We developed the concept of *integration architectures* to define both that internal coordination and how organizations interact with their extended workforce.

Our integration architecture model contrasts with the default, siloed approach to managing interactions in most workforce ecosystems. Typically, contingent workers are the responsibility of procurement. Partners and alliances are often handled by strategy, and AI and automation are part of the tech organization (but rarely regarded as part of the broader workforce ecosystem). HR typically oversees full- and part-time employees. In this common approach, multiple groups work independently to govern the contributors for which they have a mandate, but efforts across the organization are uncoordinated.

Managers in different departments frequently use combinations of external and internal workers without any centralized coordination. These decentralized approaches may be efficient on a local level, where each business unit and functional manager retains maximum control, but they are suboptimal at an aggregate level.

Indeed, decentralization can have substantial drawbacks when orchestrating a workforce ecosystem. Dispersed efforts may not be aligned with overall strategic priorities and may undermine a business's pursuit of new strategic directions. The lack of integration may limit available data about who (and what) is contributing to an organization. It may lead to cost inefficiencies as contingent workers are sourced on an ad hoc basis. And it likely means that both internal workers and external contributors (existing and potential) have less visibility into opportunities to contribute. While decentralization is currently the most common approach to managing employees and the extended workforce, it is almost always uncoordinated.

Why Centralized Integration Architectures Appeal

Given the shortcomings of decentralized architectures, many organizations orchestrating workforce ecosystems are creating integration architectures that are more centralized and cross-functional in their design. In some organizations, HR coordinates workforce ecosystem management with the procurement and IT functions; in these cases, business leaders and teams work with HR and others to proactively manage risks. Other companies are adopting a more cross-functional approach to managing all types of individual workers and providers; in these cases, HR plays a key but less central role, with talent marketplaces playing a more prominent role in supporting workforce needs across business units and functions.

Swiss global health care company Novartis, for example, has set up a cross-functional steering committee to manage its approximately 100,000 internal workers and roughly 50,000 external ones. Novartis is working to provide managers with visibility into internal and external talent sources, an effort driven by data culled from a variety of partners and platforms. The process will be facilitated by curators called workforce strategists, who will grant managers real-time access to teams of employees, contractors, and technologies.

The pandemic prompted HR at another global company we studied to get more involved with overseeing the broader workforce because of the concerns it raised about remote and onsite work policies, pay

continuity, absences, and sick leave for both contingent workers and employees. Before the pandemic, HR paid close attention only to what was going on with full-time-equivalent or part-time employees, the company's vice president of HR reported; often, with contingent workers, "HR was not in the loop at all," she said. At that time, there wasn't even a shared understanding of who comprises the company's contingent workforce. The pandemic lent urgency to the idea that the company would have to be more centrally integrated and agile to take care of its contingent workers. It also underscored that the company needed to better manage the reputational, legal, operational, and cost risks of the broader workforce, and to use the entire workforce to its fullest competitive advantage.

At this same company, hiring processes and procedures had historically differed by department — and departments tended not to communicate with one another. HR supported decisions about hiring permanent employees, while procurement brought in contingent workers. Meanwhile, unbeknownst to HR, managers were often converting contingent workers into full-time employees. A newly developed clearinghouse platform that involved HR, procurement, and finance gave the company data-based cross-functional visibility into tracking and approving external workers.

Management of the contingent workforce had been a hot potato at the company, according to the chief procurement officer: "Anybody who was at the center was on the hook for all the risk and none of the benefit." But he described the company as having shifted to thinking of its relationship with contingent workers in strategic rather than transactional terms, which involves managing the contingent workforce cross-functionally. As the vice president of HR explained, "There was an acknowledgment between our CFO, our chief general counsel, our CHRO [chief human resources officer], and our chief operating officer that they all had skin in the game."

Talent marketplaces are another great tool for anchoring a centralized and more cross-functionally integrated architecture. NASA, for example, used to have six talent-market platforms spread across multiple units, each of which independently matched employees with gigs and projects. Now the space agency uses a single talent marketplace — one orchestrating mechanism — to coordinate access to internal human talent across the organization. Extending its internal talent marketplace to external contributors is on NASA's horizon.

Integration Architecture Challenges

While centralized and cross-functional integration architectures are enabling organizations to achieve higher levels of coordination in their workforce ecosystems, these efforts are in their nascent stages. Even among companies on the leading edge of workforce ecosystem transformations, leaders emphasize that these efforts are just starting to gain traction. In our research and consulting work, we see that most organizations still take reactive, local, and uncoordinated approaches to enlisting and retaining external talent and complementary contributors.[1]

Leaders realize that such decentralized efforts are both cost- and resource-inefficient and risk demotivating internal employees. Yet they struggle to establish a centralized cross-functionally integrated architecture for workforce ecosystem orchestration. We have heard the following concerns:

- How do you identify the right set of stakeholders to create a centrally integrated architecture for workforce ecosystem orchestration?
- How do you get stakeholders to engage in local workforce ecosystem experiments to tailor shared goals to specific contexts?
- How do you promote coordinated learning from local experimentation?
- How do you improve your workforce ecosystem implementation process over time?

To create an integrated workforce ecosystem, at least three types of issues need to be addressed: structural design (pertaining to the division of labor, goals, and incentives), politics (relating to resources, power, and status), and culture (affecting individuals' search for identity and meaning). We recommend taking a phased approach to these issues, which intertwine, overlap, and can reinforce one another. This process is likely to be most appropriate for large, established organizations that are starting to embrace workforce ecosystems, but key elements should be helpful for those in small and medium-size enterprises. (See "Four Phases of Orchestrating an Integrated Workforce Ecosystem.")

In the first phase, we propose creating an orchestration team to develop a working plan, goals, and metrics in consultation with relevant local and central stakeholders, both internal and external. This team should focus on integration considerations within the organization (functional roles and responsibilities) and on relationships with external participants. By working with groups within the

Four Phases of Orchestrating an Integrated Workforce Ecosystem

The graphic below describes the key challenges associated with orchestrating workforce ecosystems and the phases associated with addressing them.[i]

KEY CHALLENGES	KEY PHASES ADDRESSING STRUCTURAL DESIGN, POLITICAL, AND CULTURAL ISSUES	
A reactive, local approach to bringing in external talent is costly and risks demotivating internal talent.	**Creation of the Orchestration Team**	Leaders assemble a combination of central, local, and external representatives from key stakeholder groups and develop a broad framework for action.
There is a gap between what local managers need, what external contributors provide, and what traditional practices allow.	**Local Experimentation**	Local teams conduct pilots to tailor workforce ecosystem goals to their varied contexts and solve problems that arise during experimentation.
Problems arise during local experimentation that cannot be solved at the local level.	**Coordinated Learning and Resourcing**	The central team tracks local experiments, promotes coordinated learning, and implements organizationwide solutions.
Managers in other parts of the organization want to begin using external contributors.	**Ecosystem Expansion**	Leaders periodically widen the central team to include additional actors who revise overall goals in response to the review process.

organization that already engage external workers, the team can get a head start with managers experienced in orchestrating parts of workforce ecosystems. From a structural design perspective, they can quickly begin to highlight and address previously identified skills gaps.

To deal with political concerns, the team can choose local well-respected and action-oriented champions to lead transformations. Additionally, the team can include representatives from external contributors to bring their perspectives to the efforts. Team members should be able to speak for functional areas, product groups, and business units as appropriate; the key is to obtain participation from across stakeholder groups. Finally, to grapple with cultural challenges, at least one team member should play the role of a boundary spanner, serving as a go-between among the central team, local teams, and other affected groups.

In the second phase, we suggest promoting local experimentation. Central orchestration teams can introduce pilot programs to explore potential configurations of workforce ecosystem relationships. These experiments can address structural issues, such as staffing projects with a mix of internal and external workers, identifying necessary skills, ensuring competencies, and measuring the quality of outcomes. They can address political challenges, such as internal employees resisting contributions from external workers and local leaders feeling tension as they lose some control over team composition. Finally, cultural questions may arise as employees adapt to shifts in responsibilities, especially if they need to take on more of a facilitation role coordinating participants from various sources.

In the third phase, we emphasize coordinated learning and resourcing, which spans challenges (and successes) identified by local teams and overseen by the central team. Structural impediments, such as existing policies and procedures (intellectual property licensing models or training rules, for example) may serve the organization well in a traditional employee life-cycle model but require revision for a workforce ecosystem. Resourcing issues may arise as local managers hire more external workers or partner more easily with subcontractors but then refuse to release employees to accept other opportunities. Even when the C-suite and lower levels embrace changes, midtier managers might be resistant because they are often tasked with managing the day-to-day challenges of these sometimes highly disruptive transformations.

In the fourth and final phase, we consider workforce ecosystem expansion. Once initial pilots are analyzed and new practices are starting to be institutionalized, leaders should consider what other new

systems, tools, goals, metrics, and processes have proved successful enough to adopt. These should be regularly reviewed as the organization continues to gain knowledge and experience. Leaders may want to expand the central orchestration team to include representation from other internal groups. And they may want to consider connecting their workforce ecosystems with others — for example, working more closely with client organizations and their ecosystems. Culturally, leaders may consider more actively promoting distributed learning and workforce ecosystem activities through storytelling and other communication tools. They will likely want to highlight growth opportunities while also beginning to address the myriad concerns that inevitably accompany such transformations.

This four-phase approach offers a practical way to engage, connect, and activate key stakeholders. From there, organizations can begin to shape their own strategies and pathways by experimenting with new types of integration architectures and quickly iterating as they learn what does and doesn't work across different contexts.

Echoing the way that integration architectures define how internal functions and business units work together to orchestrate workforce ecosystems, leaders need to define how to govern relationships with external contributors. Leaders face several decisions about which integration architectures are appropriate for external contributors.

The choice of third-party integration architectures may determine the degree to which partners are willing to expend resources to participate in (or contribute to) the workforce ecosystem. Decisions around how to coordinate with developer ecosystems, for instance, can be critical to effective workforce ecosystems. Google Play is Google's distribution marketplace for apps and content. In comparison to Apple's App Store, through which Apple distributes apps and content, Google has a lighter touch, with less-strict requirements and compliance testing. Apple's policies are known to be much more stringent. Integration architectures with external developers may have more or less rigidity and be more or less welcoming.

Crafting integration architectures with third parties raises questions about who should own these relationships within the enterprise. For example, video game console manufacturers often enable third-party developers (complementors) to create games that work on their systems; frequently, it is the demand for these third-party games that drives sales of particular consoles. Should developer relations be the responsibility of a business development or strategy group (that may also handle strategic alliances) or a separate group with specific responsibilities for developer ecosystems? An integration architecture helps define responsibilities and adjudicate potential conflicts among internal groups with competing interests.

IMPLEMENTING INTEGRATION ARCHITECtures in your organization begins with an assessment of how your workforce ecosystem currently functions. How much visibility and control does your organization's HR function currently have over internal and external contributors? If these contributors are currently managed in a decentralized manner, evaluate whether your organization is best served by this architecture.

If you recognize that a more centrally integrated and orchestrated workforce ecosystem would be a better approach for your organization, decide which groups and individuals should be part of the orchestration team. Should someone (or some group) be centrally responsible for overseeing the entire workforce ecosystem?

Throughout our research, we have heard leaders describe their struggles to engage talent essential to their company's success within an increasingly complex and connected workforce ecosystem. We have observed time and again that intentionally orchestrating a workforce ecosystem perspective can help leaders take a much richer and more nuanced view of their own organization and the people, partners, and technologies upon which they rely to meet their strategic goals and objectives. ■

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i. Ibid.

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Executive Briefings

SUMMER 2023 | VOLUME 64, NO. 4

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NAVIGATING RISK AND DISRUPTION
[Algorithmic Inertia]
Predictive Models Can Lose the Plot. Here's How to Keep Them on Track.
Algorithmic inertia can result in guidance that leads businesses astray.
By Vern L. Glaser, Omid Omidvar, and Mehdi Safavi
SOLD
Moody's ended up downgrading 83% of AAA-rated mortgage-backed securities valued at billions of dollars by 2008.
THE RESEARCH

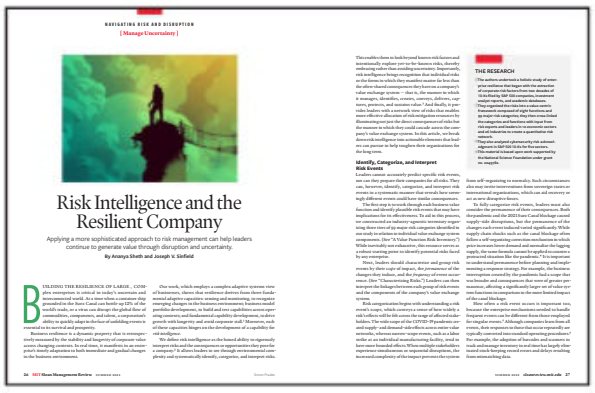
Predictive Models Can Lose the Plot. Here's How to Keep Them on Track.

Vern L. Glaser, Omid Omidvar, and Mehdi Safavi pp. 20-25

Key Insight: When algorithms aren't updated to account for changes in the environment, they deliver poor-quality predictions.

Top Takeaways: AI models designed to dynamically account for new circumstances don't always do so effectively. This scenario, called *algorithmic inertia*, can result in poor guidance and flawed decisions. The authors explored the causes and consequences of algorithmic inertia by investigating credit-ratings agency Moody's and its use of algorithmic models to rate mortgage-backed securities in the years leading up to the 2008 financial crisis. They found that the most significant contributing factors to algorithmic inertia are buried assumptions, superficial remodeling, simulation of the unknown future, and specialized compartmentalization. Exposing data and assumptions, and periodically redesigning algorithmic routines, are two key practices for heading off such inertia.

REPRINT 64415


NAVIGATING RISK AND DISRUPTION
[Manage Uncertainty]
Risk Intelligence and the Resilient Company
Applying a more sophisticated approach to risk management can help leaders continue to generate value through disruption and uncertainty.
By Ananya Sheth and Joseph V. Sinfield
THE RESEARCH

Risk Intelligence and the Resilient Company

Ananya Sheth and Joseph V. Sinfield pp. 26-33

Key Insight: Taking a more logical approach to risk management can help leaders sustain value generation amid disruption and uncertainty.

Top Takeaways: Building the resilience of large, complex enterprises is critical in today's interconnected world. Risk intelligence — the honed ability to rigorously interpret risks and the consequences or opportunities they pose for a company — supports organizational resilience by helping leaders identify and manage a broad array of potential threats to their company's value exchange system, both over time and across changing business contexts. To strengthen their organization's risk intelligence, leaders should systematically categorize and interpret risk events, compartmentalize uncertainty and reduce its impact, and construct and contextualize an enterprise risk network.

REPRINT 64408

NAVIGATING RISK AND DISRUPTION
[Strategy]
How Professional Services Firms Dodged Disruption
Adopting a dual mindset of paranoia and pragmatism can keep incumbents nimble amid changing market dynamics.
By Julian Birkinshaw and David Lancefield

How Professional Services Firms Dodged Disruption

Julian Birkinshaw and David Lancefield pp. 34-39

Key Insight: Professional services firms with longevity hold lessons for other businesses trying to survive disruptions in turbulent markets.

Top Takeaways: Big professional services firms appeared to be in the crosshairs of new, technology-fueled competitors a decade ago, but many have maintained or even bolstered their positions. These consulting giants, top-tier law firms, and others have found resilience in their capacity to diagnose the different causes of potential disruption and respond accordingly. They have doubled down on their traditional strengths of tackling clients' most challenging problems and providing advice and compliance in high-impact, large-scale, high-risk situations — and charging a premium to do so. And they have learned to live with a pragmatic acknowledgement that their fundamentals are sound, tempered with a touch of paranoid suspicion of emerging technologies and competitors.

REPRINT 64405

The Missing Discipline Behind Failure to Scale

Companies make significant investments in developing and incubating new business initiatives, but too few follow a rigorous path to scaling their ventures.

By Andy Binns and Christine Griffin

The Missing Discipline Behind Failure to Scale

Andy Binns and Christine Griffin pp. 40-45

Key Insight: Developing a scaling path for new ventures is both an art and a science, but it's one that leaders can use to learn and iterate as they go.

Top Takeaways: Companies make significant investments in developing new business initiatives, but too few follow a rigorous path to broadly implementing them. While 80% of companies claim to ideate and incubate new ventures, only 16% of companies successfully scale them. Scaling paths require a clarity of ambition equal to the scale of opportunity; a set of plausible strategic options for what assets will be needed to achieve that ambition; smart brainstorming about how to acquire those assets; an openness to bringing in new leaders to support the expanding scope of activities; and preparation for the inevitable high-stakes moments when decisions entail commitments that will be difficult, if not impossible, to reverse.

REPRINT 64404

Helping Neurodivergent Employees Succeed

Neuroinclusion will remain elusive if managers don't embed support activities throughout the employee journey.

By Emily R. Russo, Dana L. Ott, and Miriam Moeller

Helping Neurodivergent Employees Succeed

Emily R. Russo, Dana L. Ott, and Miriam Moeller pp. 46-52

Key Insight: Companies can expand their talent pools by developing a neuroinclusive hiring strategy and work environment.

Top Takeaways: When it comes to hiring, management, and retention in the workplace, individuals with neurological differences, especially those on the autism spectrum, are often discounted by employers, to everyone's detriment. Bringing neurodiversity into the larger conversation about workplace diversity, equity, and inclusion is important not only because it's the fair thing to do but because neurodivergent individuals can make valuable contributions. Creating a neuroinclusive organization calls for specific training and development efforts that benefit neurodivergent employees and the wider workforce. Managers are key to the success of these programs and need to be educated about how to support their neurodivergent employees.

REPRINT 64414

How Digitally Mature Is Your Finance Office?

CFOs who are digital leaders prioritize developing seven key capabilities to unlock the power of data and analytics.

By Kristof Stouthuysen

How Digitally Mature Is Your Finance Office?

Kristof Stouthuysen pp. 53-57

Key Insight: Many finance offices are stuck in traditional operational roles and aren't benefiting from advanced analytics.

Top Takeaways: Finance leaders in a wide range of industries are trying to integrate data and analytics to improve operations, but not all CFOs have cracked the code. In particular, many are not capitalizing on the promise of new machine learning applications. CFOs who are able to challenge an often conservative, cautious culture and manage to successfully deploy advanced analytics can deliver more real-time insights, reduce human error and bias, and speed up processes and decision-making. What's more, while more traditional finance leaders often guard the data they possess, those who embrace advanced analytics — what the author calls *digital finance leaders* — become strong advocates for democratizing data across a company's silos.

REPRINT 64420

Cashing Out Excellence

Why do so many leaders trade in long-standing capabilities for short-term results?

By Robert D. Austin, Robert H. Hayes, and Richard L. Nolan

Cashing Out Excellence

Robert D. Austin, Robert H. Hayes, and Richard L. Nolan pp. 58-63

Key Insight: Too many leaders engage in *performance hacking* — delivering on particular metrics to give the appearance of effective leadership without producing real performance.

Top Takeaways: Recent disruptive events like the pandemic and war in Europe have exposed businesses weakened by short-sighted leadership decisions. An analysis of Southwest Airlines, Boeing, and GE looks at why successful companies sacrifice the business excellence they spent years building — including values and relationships that have served as their foundation — for near-term financial gains such as cost reductions and stock price improvements that ultimately harm stakeholders. The authors share the typical warning signs that indicate leaders are engaging in the practice.

REPRINT 64437

Opening Access to the Fast Track for Career Equity

Haig R. Nalbantian pp. 64-69

Key Insight: Understanding what factors drive employee promotion can help managers more equitably position women and people of color for advancement.

Top Takeaways: New research shows that factors unrelated to employees' knowledge, capabilities, or behavior have an outsize effect on career advancement. Circumstances such as reporting to a high performer, holding a career-accelerator role such as being a supervisor, and not taking advantage of flexible work options all play a leading role in promotions and pay increases. Disparities in performance ratings also have a cascading effect that adversely affects people of color: In the author's study, people of color in the majority of companies were up to 50% less likely to receive high performance ratings. Because ratings tend to persist, with a high rating one year predicting the likelihood of a high rating the next, getting shut out from the start can significantly impede career progression.

REPRINT 64432

The Unequal Rewards of Peer Support at Work

Nancy Baym and Constance Noonan Hadley pp. 70-73

Key Insight: Job satisfaction comes in part from how well people feel their organization recognizes and values the social support they provide to colleagues.

Top Takeaways: Employees' supportive behaviors with one another boost engagement and productivity, but research shows that men gain more benefits from such efforts than women do. Social support includes emotional assistance, esteem reinforcement, social companionship, information or advice, and instrumental help. In the authors' study, more women than men focused their efforts on listening, showing personal interest, and complimenting a coworker, while men reported offering career advice more frequently. Although men said they provided less-frequent social support than women overall, they received higher levels of organizational encouragement, rewards, and job satisfaction. Managers can encourage a more equitable peer culture by making the invisible visible and valuable — providing clarity about which behaviors count while also revising performance management systems.

REPRINT 64422

Moving Beyond Islands of Experimentation to AI Everywhere
IOEs' tactical initiatives may generate quick wins but are not necessarily aligned with the strategic objectives.

Moving Beyond Islands of Experimentation to AI Everywhere

Amit Joshi, Ivy Buche, and Miguel Paredes Sadler pp. 74-79

Key Insight: It may make sense to start AI efforts with isolated experiments, but new, company-wide structures are needed to scale them and reap broader benefits.

Top Takeaways: Artificial intelligence often takes root in isolated experiments within an organization, and many companies stall out on their AI journeys because of difficulty moving beyond these pilots. Scaling technology requires different types of formal structures: The authors found that AI projects generally begin as islands of experimentation before coming together around a corporate *center of excellence*. A small number then move to a sophisticated *federation of expertise* model built on a centralized base of knowledge, systems, processes, and tools, and on decentralized embedded capabilities. Enterprises with AI ambitions need to be prepared to make two structural leaps away from the startup stage if they are intent on delivering on the technology's potential.

REPRINT 64425

Manage Your Workforce Ecosystem, Not Just Your Employees

Elizabeth J. Altman, David Kiron, Jeff Schwartz, and Robin Jones pp. 80-84

Key Insight: New organizational structures are needed to coordinate workforce ecosystems that include a wide array of external workers and partners.

Top Takeaways: A majority of executives agree that the idea of "the workforce" is being redefined. They say it's broader than an organization's full-time employees, instead encompassing ecosystems of contractors, gig workers, service providers, and even technologies. These networks require innovative management practices, given that hierarchical, command-and-control leadership is ill suited for workforces that span internal and external boundaries. In developing new practices, leaders must address three types of issues: structural design (pertaining to the division of labor, goals, and incentives), politics (relating to resources, power, and status), and culture (affecting individuals' search for identity and meaning). Intentionally orchestrating a perspective that considers all players leads to a more nuanced view of how organizations and their partners cooperate to meet their strategic goals.

REPRINT 64433

Ask Sanyin:

How Can I Field a Winning Team Without All-Star Players?

My organization urgently needs to execute on a new strategic initiative, but I'm not confident that my current staff members have the skills and drive required. How can I field a championship team when I don't have any all-star players?

IT'S EASY FOR MANAGERS TO succumb to a scarcity mentality and believe that their people aren't good enough — but it's important not to nurture this mindset. When we look closely at this problem, we often discover that the existing team's potential hasn't yet been fully realized. Building a championship team is almost always a matter of activating untapped potential, not trading for better players.

Years ago, my friend Sue Gordon, the former principal deputy director of national intelligence, told me that although you don't always get to choose your team, your team is enough and you must help them believe that it is so. How do we make the most of who we have rather than fixating on their deficiencies?

The first step is to get much better at diagnosing the underlying problems when our teams aren't functioning effectively. I start by assessing where there are skill set issues and where there are behavioral problems. The former is straightforward to address (if not overnight) by investing in training or providing opportunities to gain specific experience.

Behavioral issues — by which I mean contextually variable behaviors that can diminish an individual's effectiveness or team dynamic — are a bit tougher. For example, an opinionated, creative person may contribute meaningful new ideas in meetings but dismiss suggestions made by others, demotivating teammates and dampening collaboration. Helping that team member see the effect of their behavior and develop new communication habits can improve team effectiveness.

Second, make sure everyone knows why and how they matter. Your team can't achieve greatness if its members don't believe that their presence on the team is important, their contributions are appreciated, and their ideas will be considered.

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Identify each individual's differentiating contributions (what I call *superpowers*), and explicitly share those insights with them. Superpowers are the inimitable strengths we all have — but because they're so innate to us, we often don't see them and need others to point them out to us. An important part of good leadership is identifying the superpowers of everyone on your team and encouraging them to share what they see as each other's unique talents. This has the added benefit of giving you more data about how your team can sync up.

Finally, focus on the people, not the titles. Notice the capabilities, gifts, and inclinations of the people on your team, and be open-minded about how they might work together in new configurations. The market and operating context are changing rapidly, demanding a fluidity beyond the functional constructs that exist now. Someone's current title does not comprehensively define their capabilities, and it can often constrain them to a more limited role. Having a more expansive view of each person can help you harness the team's fullest potential.

When we're open to the potential of our existing team members and create opportunities for the team to surface, see, and recognize new strengths, we can come to see that the championship team is the one we already have. ■

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